##### **PRT-CGN-PG-123B PROTOCOL FOR THE MULTIPLICATION OF COMMON BEAN**

This protocol applies to all parties involved in the multiplication of CGN material

**Introduction**

Multiplications have to fulfil minimum quality requirements to ensure maintenance of genetic identity and integrity (avoiding seed mixing among accessions and minimizing loss of diversity through genetic drift) and high seed quality (absence of diseases and sufficient germination ability).

Contamination with Genetically Modified Organisms (GMO) should be prevented.

*Any deviation from this protocol should be reported to CGN, after which it will be recorded by CGN in the Multiplication logbook (FOR-CGN-PG-002).*

**Multiplication**

Maintaining genetic integrity

* Isolation
  + *Phaseolus vulgaris* is a self-pollinating species so no isolation is needed
* Population size
  + Multiplication is performed with at roughly 100 plants; minimum number of plants is 50.
  + When less than 50 plants are used, this should be reported as a deviation.
* Sowing
  + A potential low germination is taken in consideration by CGN. The number of seeds to be sown is determined by CGN accordingly.
  + Seeds are pre-sown in trays to guarantee a good germination and emergence.
  + In case of poor or very slow germination, this should be recorded.
* Vernalisation
  + Not applicable.
* Cultivation
  + Selection should be avoided. In case an unexpected high level of heterogeneity or a mixture of species or types is observed, this should be reported to CGN. CGN will then decide if or how selection can take place. The alternative procedure will be recorded in the Multiplication Logbook.
  + Climbing type accessions are grown onto bamboo canes or along ropes.
  + During cultivation plants are guided in such a way that plants from different plots do not touch each other.
  + When the first pods start to ripen, measures to deter birds should be used to prevent seed loss.
* Pollination
  + Not applicable.
* Harvest
  + The pods should be harvested when they are ripe. If an accession is heterogeneous for harvest time, plants should be harvested on different dates, and the harvested seeds may be bulked into a single sample. All produced seed should be send to CGN.

Maintaining identity

* Registration
  + During sowing, cultivation and harvesting, accessions should be clearly marked with a label indicating the field number. All field numbers assigned prior to sowing should remain unchanged up to and including harvesting.
* Harvesting
  + Plots should be harvested carefully in order to avoid contamination with seeds of neighbouring plots.

Maintaining seed quality

* Seed decontamination before sowing
  + Not applicable.
* Pruning
  + Plants from semi-climbing type accessions are trimmed to keep them under control.
* Cultivation
  + Not applicable.
* Inspection
  + The crop needs to be treated against pests and diseases. The pests and diseases that are occurring are recorded in the Multiplication logbook. When a pest or disease occurs that can threaten a good harvest of seeds, the CGN should be warned.
* Seed treatment after harvest
  + The bags with harvested pods should be pre-dried, 3-7 days at 25-30°C.
  + Seed cleaning procedures after harvest should be discussed with CGN.

**Concluding actions**

* Recorded deviations from this protocol should be sent to CGN along with the seed, and are recorded in the Multiplication logbook.
* Harvested seed is sent to CGN as soon as possible, in any case no later than six months after harvest. The seed bags should be labelled with a field number and a CGN number.