##### **PRT-CGN-PG-115 PROTOCOL mulitiplication lupine**

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**

Maintiaining genetic integrity

* Isolation
* *Lupinus albus* and *Lupinus luteus* are cross-fertilising species. The material is therefore propagated per accession in multi-crop isolation fields, spaced about 50 m apart. The minimum distance is 40 m. The isolation crop is rye or Triticale.
* Population size
* Multiplication is done with about 100 plants per accession; the minimum number of plants is 50.
* It is recorded whether fewer than 50 plants participated in the multiplication. These data are copied into the Multiplication logbook.
* Sowing
* The possibility of dormancy or poor germination capacity of the seed is taken into account. The number of seeds to be sown will be determined by the CGN.
* If material germinates poorly or very slowly, these findings are recorded and copied into the Multiplication logbook.
* Vernalisation
* Not relevant.
* Cultivation
* No selection takes place. However, in case an accession is more heterogenic than expected from the passport data or in case of a mixture of different species or crop types, CGN needs to be consulted and CGN decides if and how selection will take place. This is being recorded and copied into the Multiplication logbook.
* Pollination
* There is pollination by on-site insects.
* Harvest
* Pods are harvested when they have ripened; harvesting of an accession can take place at different times and the harvested seed can be bulked. All seed produced is returned to the CGN.
* If at harvest time the pods in the top of the plants are immature, the tops are pruned away before harvesting.

Maintaining identity

* Characteristics
* During sowing, cultivation and harvesting, accessions should be clearly marked with a label indicating the field number. All field numbers assigned prior to seed sowing should remain unchanged up to and including harvesting and seed cleaning.
* Harvest
* When harvesting, care is taken to avoid mixing with seed from neighbouring fields.

Maintaining seed quality:

* Seed decontamination before sowing
* Not relevant.
* Inspection
* Not relevant.
* Inspection
* Control against diseases and pests takes place. Diseases or pest problems are recorded and copied into the Multiplication logbook. In case of detection of diseases, which threaten proper seed multiplication, the CGN is alerted.
* Seed treatment after harvest
* Bags with the harvested plant parts are pre-dried, 3-7 days at 25 - 30 ˚C.
* The method of seed cleaning is being decided in consultation with CGN.

**Concluding actions**

* All deviations during cultivation are noted and sent with the seed. These notes are copied into the Multiplication logbook.
* The harvested seed is sent to the CGN as soon as possible, but no later than 6 months after harvest, with the seed bags bearing the CGN number and field number.