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The development of the Cultivation of the Wild Lupine
to the Sweet Lupine (1927-1960)

The wild species of *Lupinus luteus* has a series of characteristics which guarantee the preservation of the species in the areas where it can be found.

- 1) a high alkaloid content which protects it from the destruction by deer.
- 2) a hardness of the seed-coats resulting in the prevention of germination immediately after ripeness and, thereby, protecting the plants against the destruction by winter frosts. The hardness of the seed-coats has the effect that seeds that are capable for germination can rest in the soil for many years so that a few of them can sprout at a time when a development and re-ripening of the plant is possible.
- 3) a slow initial development. It, too, provides a sort of guarantee against destruction.
- 4) shattering pods. The pods shatter at the time of the ripening of the plant, resulting in spreading the seeds all over the surroundings. If they remain in the pod, they occasionally would germinate in it and be destroyed.
5. a dark seed coat. It results in making the seeds, when lying on the soil, almost invisible.

These characteristics, which are useful for the wild species, are undesirable for the cultivated plant. The alkaloid content (bitterness - poison) makes the plants unusable for human and animal consumption. The reciprocal form, without alkaloid content, on the other hand, is the prerequisite for the use of the lupine as food and fodder.

Every cultivated species has to have an immediate swelling and germinating, when the seeds are sowed, so that a continued growth of the cultivated plant in the fields is assured. The immediate swelling, therefore, is a precondition for a good growth and, thereby, a richly cultivated field.

A rapid initial development, in contrast to the slow initial development of the wild species, is a precondition for the cultivated plant's being able to grow out of the weeds.

The non-shattering of the pods, in contrast to the shattering of the pods, is a precondition to the prevention of losses in the crop.

The soft seed-coats, in contrast to the dark seed-coats, is a precondition that the flour, which is being gained for human consumption from the lupin seeds, is as light as possible.

The precondition for finding mutants with the desired hereditary mutations were methods with the help of which plants with the desired characteristics could be discerned.

With the help of these methods of discerning an artificial selection in the available supply of "wild lupines" was made. As planned, all forms needed were found. After this process of selection the desired and found characteristics were combined. There were also cross-breedings between individual types, and the expected combinations were then sought among the second generation. Two, three, four and finally all desired characteristics were found within one individual plant. This plant then became the starting point of a species which, at the same time, is free of alkaloid, has soft seed-coats, has a rapid initial development, non-shattering pods and white seeds.

The species with this combination of characteristics is being planted in numerous countries and is being used as fodder and, sometimes, as food for human consumption. Thereby, the lupine has become a model example for the breeding of a wild plant into a cultivated plant.

The genetical analysis of the desired characteristics that are valuable for the cultivated species has shown that practically all these characteristics are of a recessive nature. The fact that the lupine is self-fertilizing and that the desired characteristics are of a recessive nature, has essentially simplified the work of cultivating the plant.