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 righly 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.