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The Seed Productivity of Some Plants in the Rock and Debrises of the High Upland of the Small Caucasus

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Abstract:

One of the most important features of being adapted to the existing climate condition of the plants is the seed productivity. Some kinds of seed productivity have been learnt in the investigated territory by us. Investigated territory was Goshgar and Kapaz mountain tracts. The same territories are defined by short vegetation period, low temperature, with the high sun radiation. (1,2s). The general accepted methods were used in the learning of the process of seed productivity and increasing with seed (5,6,7). The potential and real seed productivity was investigated for defining the seed productivity.

Key words: Rock, debris, sex, kind (of), seed, sprout

Productivity of factual seed – the amount of the ripened seed with the full of life ability characterizes both quantity and quality of the ability of the yielding fruit.

Potential seed productivity - is understood the quantity of the flowers running to seed in a shoot.

The quantity of the ovaries in the generative shoot and the seeds counts for the potential and real flower productivity. For this purpose the seeds which are in the shoot in the II and III row count in the condition of the natural growing in 10-15

plants.

Increasing with the seed, the forming of the plants in the rock and debris plant is determined by some parameters: middle seed productivity seed, the seed harvest seed, seed reserve in the land.

Productivity of middle seed is defined in the ripened time of seed. For each investigation is taken 100 generative shoot. The length of the each flower, the quantity of the flower in the flower group, the height of the generative shoot is analyzed.

Productivity of middle seed counts with weight method because it is difficult to count in each flower and takes much time. Seeds of the 100 generative shoot is placed on the table in the rectangle form after weighting in the balance. It is separated to equal squares with the help of the ruler. Measure and quantity of the squares show the measure and quantity of the investigated kind. For instance: Big seedy Alopecurus is separated vaginatus 1x5 sm to squares in the measure, but small seedy Agrostis is separated tenuis 1x1 cm to squares in the measure. Little part seed is taken for sample from each square.

The seeds which have taken for sample are weighed and counted. The productivity of one generative shootcounts. The seed productivity is counted with striking the quantity of the seed in a generative shoot in a quantity of generative shoot in $1m^2$.

The eating of the seeds by insects, spilling to the land after ripening havebeen counted by us. Loss of the seeds by insects may define according to injured seeds being in the generative shoot. For this purpose, is taken 100 flowers groups, takes into account the injured and not injured seed in each group, and also number of the table-cloths.

Groups of gathered flower are kept for a few months, it is easy to count the seed loss then. Because, table-cloths become more active.

In order to count the quantity of the 2 sm^2 territory the grass is spilt by hand and put carefully into the polietilen bag. After drying seeds spilling to the bag is weighed, separated according to the kind counts for each kind. Coarseness of the seeds is determined according to their absolute weight. It is taken out, the seeds in 100 generative shoot, clean for this purpose, each of 500 seeds are divided into two samples. Seeds being been in the each sample are pulled weighed with exactness of 0. 01qrs. Quantity of the 100 seeds in the first and the second sample is weighed in the condition of laboratory and field. It is defined precisely in the condition of temperature changed sharply. It is kept in the Petri bowl over damp filter paper within 20 days. Seeds are sprung within days 6-8 20-320s, 16-18 at 3-80s. Sprout counts in that plant that growth of normal height is defined with observing of the system of root allowing to forming of new complete and shoot in them. Field sprouts are specified June, July of the next year in months:

a) Seeds remaining under the in the natural condition
b) Seeds under the untouched grasses

For each investigated kind is taken 400 seeds which were in the previous years. It is sown in the 50x50 cm close areas. Sowing depth 0.5sms, 200 seeds soused in the each row. Over the germinating of the seeds 3 year (in 2011-2013) observation have been carried out. The observation is carried out from the end of October the end of June. Observations carried out in the different directions are carried out by the same in the hothouses.

Seed productivity had been specified as the following.

1) The quantity amount, number of the generative being individual shoots
2) The middle quantity of the seeds being in flower group, or generative in the shoot
3) Middle quantity of the running to seed of flowers
4) Quantity of the seeds being in a fruit.

The quantity of the generative shoots being individual or

in the sample field shows general generative plant of rock and debris. Generative is understood generative and connections of the vegetative shoots in the little square of unique sample. In the Goshgarmountain tract based generative plant of rock and debris was 2100-2800 $1m^2$ in 2012-2013.

The quantity of the generative shoot in $1m^2$in accordance with the second forming ears in early casita time and the bean plants in the grass was 2025 in 2011, 2900 in 2012, 3100 in 2013. Generatively degree has come down to 10. 2%s from 40% in 2013.

The general quantity of the shoot in the reaping area come down1650 in $1m^2$, and also the generalization come down 23,6% in 2013.The observations show that not all flowers falling the generative phase flowers in every year, some of old individuals for example, Agrostistenuis, Trifoliumcanescens remain in vegetative situation after blossoming for 2-3 years, and then later on they become in generative situation again. But the bluebell and is in the generative situation without pausing.

The middle quantity of the seeds being in a generative shoot.

The middle quantity of the seeds being in a generative shoot has counted in the kinds of bluebell (Campanula) and dew (Alchemilla) by us. In the kinds of Campanula 8-12, in the kinds of Alchemilla 120 flowers on them had been observed in 2011. In 2012 in the kinds of Campanula 15-17, Alchemilla 98 flowers had been observed. No do but, decrease of the flowers of the bluebell in the result of the sharp changing of the environment condition proves once again the rekiktliy and characterize the high opportunity of the adapting process.

The middle quantity of the flowers running to seed.

Observations show that flowers being in the groups of all flowers that we learnt cannot run to seed. The bee fermented leavening in the flower does not go 40. The influence of one or another factors have been learnt these. This kind of flowers is

observed in flowerless that were not touched from the most different causes.

In some circumstances this process happens in the result of proterangineya and proterandriya.

1. that is ripening quickly of the female flowers, late ripening of the dust cells;
2. While the male flowers are ready for being fermented, the dusty cellare not ready for germinating in the female mouth (different causes, the dusty cell cannot germinate untimely being in the female mouth according to the injuring by insects).

The middle quantity of the seeds in the fruits- The quantity of the seeds in the fruit is defined according to the quantity of the ovaries germinating ripened seeds. The seeds ripened in an ovary is a counted by us. Generally the quantity of the touched seeds are much than the untouched individuals.

Quality of the seed. Coarseness of the seed is one of basic signs of its quality. Quantity of the absolute weight, reserve food matters is dependent on it. Coarseness of the seed has not been only biological feature, it is at the same time parameter of its ripen condition. But measure and weight of the seeds is much than the measure and weight in the not casted fields.

Counting in the land of the seed reserve: it is necessary to clear the restoration of the plants with seed in the high mountain condition (6).

The following have been learnt from by us.

The total seed reserve in the 0,5cm thickness of the land, the germinating of the seed on the top layer of the land, the vertical spreading of the seed in the deepness 0of the land.

The seed reserve on the land 0,5cm- this lay of the land characterize with the majority of seed. The seed reserve strongly changes according to the usage regime.

In an ordinary casting condition 80000 seeds are in $1m^2$, in late casting condition 90000seeds are in $1m^2$, in early casting condition 40000seeds are in $1m^2$.

In the result of learning the kind of seeds of the top of the land

in the late mowing in individual 25-26 seeds, in the early mowing 15 seeds are observed. In the early mowing the condition of 3-5 seeds had been observed in the III volume.

The seed reserve of the grains is always high. With the increasing of the kind the seed reserve increases too.

The counting of the superficial on the 0,5 cm of land.

At first the seed reserve must be learned in order define the restoration of the plant of rock and debris with seed.

In order to define the germination with the seed restoration in the lawn phitosenoz there on the land must be the reserve of the of the germinated seeds. For 3 years in the same sample fields the observations carried out, the composition and the structure of grass is defined.

In the 0.5cm depth of the $1m^2$ area 8700 sprouts, germinated seeds were observed by us. The quantity of the germinated seeds in the early or late mowing fields of Agrositstenuis, Trifoliumcanescens had changed more or less than thegerminated seeds in the sample fields. In general, the quantity of seed depends on the usage regime of grass. The germinated seed reserve noted on the 2cm depth of land.Although the quantity of germinated seeds in the 0-2cm are high, few of them throw height. The different condition is required for germinating of the seeds.

For Poasupina positively influences the degrees of direct sun rays. No matter some seeds in the land have the life ability they do not germinate? Their peace regime is depended on the water-resistant skin on the seed, ripe degree, regime of temperature, light up etc. Some seeds may remain in the land for 10 years and can keep the germinated ability.

The seeds in the lays of the land between 0,5-50cm is carrying out is mowed in two regimes by us. That is, in the mow regime in the thickness $1m^2$x0,5cm of the land 1000000seeds, in the 5-10cm 5000 seeds, in the 15-20 3000, in the 20-25cm 1000 seeds were noted.

In theunicasted regime in the 0,5cm 6000, 5-10cm 3200,

20-25cm 1100 seeds were noted.

Some seeds can go only to some depths of the land - Agrositstenuis, Campanula caucasica, Tanacetumchiliophyllum till 5cm; Aspleniumviride, Ranunculus oreophilus till 15cm,; Lathyruscyaneus, Minuartiaoreina till 25cm, Alchemillasericea till 50cm.

Sprout and germinating ability. Not all ripened seeds have the germinated and vital ability. The investigations show that in Antennariacaucasica the germinating ability is low (20%) and the vitality is (30.5%).

But in Agrositstenuis has the high germinating ability (85%) and vitality is 89%.

This problem was learned by different investigator (1, 3, 7). But there are not much materials about the germinating in the plants of rock and debris. The differences between the germinating in the rock and debrides, phenology, quantity, vitality, growing process is investigated, the role of the germinating in the formation of the plant of rock and debrides are defined.

The Floristic composition of sprouts. No doubt, the kinds between rock and debris plant run to seed and seeds germinate. The high mountain condition, the sharp changes in the climate, frost, the intensity of the sun rays, the frosty land do not allow to complete the whole vital forming of the sprouts. Therefore the restoration with seed is weak than the Sub-Alps and Alps. The quantity of the sprouts changes in years. In 2011 211, in 2012 15, in 2013 9 sprouts were in Goshqar mountain tract. But the kind composition had not changed. The sprouts are observed most in spring, least in autumn. The quantity of the fox tail in $1m^2$ was 215, 52 in autumns in 2011. It is true, we cannot connect it only with the natural condition. No doubt eating by rodents, the germinate ability etc. influence too.

The seed reserve having germinated ability in the land and climate condition specifies the quantity of sprouts. The few sprouts may expressed with the sharp low temperature and

much rainfalls in 2012. In the same year the unsuitable condition was the cause to be late not only in the germinated process of the seeds and also the development of other phases. 80% sprouts has perished in the summer 2013.

Festucaovina-is more spread kinds of between rock and debris. As Bromus variegates both fatty grains inclined to the South slope from ecological side. Both of them have the like phenology. The (ala) lame is eated difficultly by animals it forms the quantity of biological mass in the land. The biological productivity is 65sen.

In Festucaovina- (in one individual) forms 2250 ovaries and 1550 seeds. Sedum tenellum has formed 1550 ovaries, 1100 seeds, in Sempervivumcaucasicum-has formed 2800 ovaries, 2000 seeds. It has the highest kind of seed productivity in the investigated area. The Selaginella Helvetica has the law seed productivity, and is observed 850 ovaries in a generative shoot, total 150 seeds.

The seed productivity increases when go down the waist-band of the sulalp.

Bromes variegate- plays the dominant role I n many associations. For the biological productivity 45-60sentner/hektars falls to the part of the dominant 25-40%, to the old individual part 23%.

Saxifragaexarata's seed productivity is learned in the two populations between the rock and debris in the Kapaz mountain tract (4). The same kind increases with the help of the seed and it becomes dusty with the help of insects. The blossoming begins in April and continuous till the end of June, the yielding begins from the middle of June and continues till the end of August (9).The analyses of the seed productivity of the kind is given in the 1№ table.

The growing go	№	Potential seed productivity		Productivity of factual seed		Seed being in the individual %
		the number of the testicles		The number of the seed		
		In the small box	In the shoot	In the small box	In the shoot	
Rock	1	16,3	1033,9	13,8	701,1	33,7
	2	13	488,1	9,3	267,6	31,7
Debris	3	12	346	9,7	218,1	21,3
	4	13,4	410	6,1	166,6	21,7

From the table we see that the seed productivity is observed in the protuberances rocks. Here are in the box 16, 3 testicles and in one shoot 1033 testicle. There are 12testicle in a box, 346 testicle in a shoot.

The Saxifragacartilaginea's seed productivity was observed in the Goshgar mountain tract by us. According to the field observations it is determined that that kind increases with seed and become dusty with the insect. The blossoming period begins in May, and continuous till the end of July. The fruit yielding continuous till the end of August (8). The analyses of the seed productivity of this kind are given in the table №2.

The growing place	№	Potential seed productivity		Productivity of factual seed		Seed being in the individual %
		the number of the testicles		The number of the seed		
		In the small box	In the shoot	In the small box	In the shoot	
Rock	1	134,1	1235,2	102,1	902,3	36,2
Debris	2	134,2	1274,9	91,8	868,8	34,1

The analyses of the information about the seed productivity show that in Kapaz mountain system the most seed productivity is observing in the rocks and the least is in the debrises.

It has been known that the seed productivity depend on the kind and ecological condition.

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