International Journal of Science and Research (IJSR)
ISSN: 2319-7064
ResearchGate Impact Factor (2018): 0.28 | SJIF (2019): 7.583

Theoretical Bases of Optimization of Ecological State in Agrocenoses of the Khorezm Region of Uzbekistan

Shirin Babadjanova Kadamovna

Urgench city, Uzbekistan, Senior teacher Department of Ecology, Faculty of natural Sciences, Urgench State University,

Abstract: ***Today, the task is to develop a system of soil features for the environmental assessment of saline soils, soil fertility conservation is a strategic objective for optimization and sustainable developmentIn the field experiment conducted of irrigated meadow soils of the desert zone of Uzbekistan we examined an efficacy of two nitrogen rates (N_{30} and N_{100} kg ha-1) inoculant fertilizer on soyabean grown as a summer crop after winter wheat. It was revealed that inoculation of soyabean seeds using inoculant fertilizer and application of $N_{30}P_{120}K_{100}$ kg ha-1 before planting resulted in obtaining the highest grain yield (1.59 t ha-1) in the experiment and increases soil fertility.***

Keywords: root nodules, soyabean, mungbean, biomass, inoculation

1. Introduction

Currently, serious problems are being aggravated all over the world for preserving and restoring the land and resource potential of agriculture, related to the loss of soil fertility, pollution and soil degradation in large land masses, and large-scale land disturbance. The development of soil conservation measures and agricultural practices for restoration and improvement of soil fertility in the cultivation of crops in the Khorezm agricultural landscape are necessary and relevant. Thus, a number of laws have been adopted in the Republic of Uzbekistan to accelerate and stabilize agricultural reforms. It was noted that salinization of soils leads to physical land degradation and their further withdrawal from agricultural use.The widespread increase in saline soils and the consequent reduction in arable land necessitates an environmental assessment of saline soils in terms of their ecological status. Today, the task is to develop a system of soil features for the environmental assessment of saline soils, taking into account their multifunctional significance in arid regions. soil fertility conservation is a strategic objective for optimization and sustainable development. It is known that the anthropogenic load affects the indicators of soil fertility of agricultural lands: the content and composition of soil organic matter, nutrient content, soil acidity, density of addition, etc.The determination of these indicators for various agricultural uses will make it possible to control the state of soil fertility in the desert zones of Uzbekistan (on the example of the Khorezm region).After the harvesting of which, as repeated crops, legumes and other crops with a short growing season are cultivated. However, scientific research in this direction has begun relatively recently. In this regard, the development of agricultural techniques for growing (including its individual elements) repeated crops in the country is an urgent issue. Maintaining the fertility of lands and using them sensibly is of great importance. At present, in order to improve the ecological and agro-technical condition of lands in our country, the measures are underway to culture plants taking into account the climate, soil conditions and ensure high yields, maintain the condition of the land and increase its fertility. Solving the problem of protein in legumes ensures the increase the fodder base of livestock as well as soil fertility. The soyabean naturally accumulates the biological nitrogen in the soil and as a result reduces the amount of nitrogen fertilizer applying to the soil. It is crucial to select such crops being sensible to soil condition that, provide people with vital nutrients and products in all spheres of the national economy, as well as serve to solve the problem of food shortage in the world. In terms of replenishing food stocks, the soybean is superior to all plants and important in the world agriculture.

The Aim of the work

As a secondary crop, food crops such as mung-bean (Phaseolus aureus) and soybeans (Glycine max) are grown. This will, firstly, ensure the independence in grain provision of our state, secondly, provide livestock with fodder, and thirdly, it will increase the soil fertility several times by converting free nitrogen in the atmosphere into biological nitrogen. We have tried in our experience to apply bacterial fertilizers (nutrient nitrogen) to the soy bean, which are the best active strains of the endogenous bacterium as other crops. We investigated the growth, development and productivity of early-maturing Orzu variety of soy bean in alluvial soils under the influence of nitrogen in Khorezm region, Uzbekistan.

2. Materials and Methods

The use of modern equips to accurately reflect the biological and biochemical processes in progress within plants in higher developed countries, For example, Assi PAR, which measures leaf surface using active radiation involved in photosynthesis without damaging plants in field conditions. The Li-Cor 3100 Leaf Area Meter is used in the biological or industrial field to obtain fast and thematic leaf surface measurements. The samples are placed between the guide epidermises on the lower transparent belt and passed through the device. In Central Asian soils, soy bean is an almost new plant, so almost no tubers are formed. A large number of tubers will appear on the roots only if the seeds are treated with nitrogen before sowing. In order to activate

the movement of the endogenous bacteria in the soil or to form them, the endogenous bacteria must process the seeds. When seeds are treated with endogenous bacteria, firstly, the plant's productivity increases, and secondly, their ability to absorb pure nitrogen from the air increases several times. These fertilizers containing endogenous bacteria are called nitrogen. The live endogenous bacteria are rhizobium japonica, they perish from the steep fall of sunlight. Each of the legumes has its own rhizobium, one of which does not fall on the other. For instance the tubers of soybean don't grow among the mungbeans. The mung-bean tubers only form buds when the mungbeans are planted apart from soybeans, otherwise they become inactive. Currently, three sorts of nitrogen are used in sowing seeds; soil nitrogen, dry nitrogen and peat nitrogen. In our experiment, in the absence of liquid and peat nitrogen, at first 2 kg of soil was taken from the fields previously the soyabean planted in and treated with these soils before sowing in the next soyabean seeds. We introduced rhizobium bacteria through the soil into the soil of the experiment site.

3. Results and Discussion

Field experiments were conducted in 2010-2014 in the fields of the Khorezm branch of UzPITI on moderately saline soils. We studied the growth, development and yield of the climate-matched, early-maturing Orzu variety in Uzbekistan at a rate of 60 kg / ha and under the influence of nitrogen. The most reliable, simple, and effective method of seed nitration is to treat the seeds directly before sowing (inoculation). Seed inoculation should be carried out in the soy bean plantation to maintain the viability of the endogenous bacteria. As a result of nitrogenizing of seeds, we observed the formation of numerous tubers on the root of the soybean plant. We obtained nitrogen strains for our experiment from the All-Russian Agricultural Microbiology Research Institute in Leningrad, Russia. It was planted on July 3 as a secondary crop after winter wheat. Row spacing 60 * 30 cm, seeds are sown to a depth of 4–5 cm. Field experience options are arranged in a 4-reversible and randomized manner. Experimental data were processed varieties-statistical in SAS 9.2 environment. During the experiment, the growth, development and productivity of plants were studied. Phenological observations show that nitrogen inoculated variants differed in plant height, number of leaves, and number of pods. The fertility indicators of the plants, the number of pods in a tube, the weight of the 1000 pods have been studied in under experiment. During the growing season, 5-6 times 800 m3 of water per hectare was required. During the experiment, the formation of endogenous bacteria, their number and weight were taken into account. 6-7 days after germination, the tubers were counted, their number increased during the flowering period, and then their number did not change. The results obtained. showed that in the variant where the seeds were treated with nitrogen, the grain yield was 15.7 centenary per hectare. It was noted that the yield of the nitrogen-free variant was proportionally less than 1.5 centenary per hectare.

This means that planting the soybean treated with the nutrient nitrogen in vacated areas from first crop on farms will increase economic efficiency by increasing grain yields twice a year.

Table 1: Efficacy of Nutrient Nitrogen Treatment of Soyabean Seeds

Option	Bean length, cm	Number of grains in per bean	grain weight 1000 grains, g	Grain yield centenary per hectare
Soyabean N30 (strained)	5.1a§	3.2a	124.9a	15.7a115.7 a
Soyabean N30(without strain)	4.9b	2.9b	99.5b	14.2b14.2b

Statistical processing: t Tests (p = 0.05)

Nutrient nitrogen -treated sorts of soyabeans were characterized by the growth, development, grain weight per 1000 grains, leg length, number of grains per pod, and high grain yield (Table 1).

The yield of crop in tons per hectare

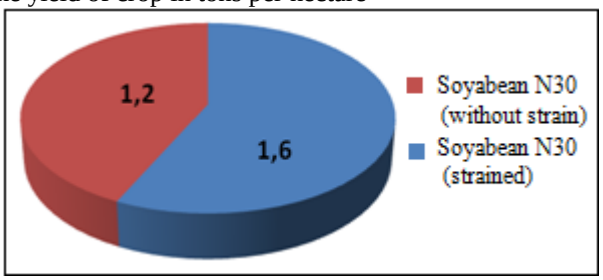

Figure 1: Root nodules

This experiment proofs that it will be a good ground for the crops planted after the soyabean also, the soil becomes soft. Therefore, the soil does not require a lot of agro-technical processing, does not require a lot of mineral fertilizers, and, most importantly, the technique is economically less expensive than the current demand. Nitraginization does not require much labor and material costs, but it increases productivity and the amount of protein in the seeds. At the same time, the plants grow well, the yield structure improves, and a protein-rich and dietary grain yield of around 15-16 ts / ha can be achieved (Figure 1).

4. Conclusions

Thus, in the conditions of alluvial soils of irrigated-meadow fields of Khorezm region, we observed that when soybeans grown as a secondary crop after winter wheat were treated with nitragin, a large number of tubers were formed at the roots of plants.

Concluding from the experiment, it can be said that in the experiment conducted on saline soils in Urgench district of Khorezm region, high yields were achieved. From the point of view of farming, the cultivation of legumes performs 3 tasks at once:

1) Itis an important source of increasing grain production
2) The grain of legumes is rich in protein and allows to solve the problem of providing livestock with protein feed in a practical way.
3) Legumes are the source of increasing soil fertility, a specific system that absorbs biological nitrogen from the air.

References

[1] Постадийная схема развития растений сои. Extension of University of Illinois. http://weedsoft.unl.edu/documents/GrowthStagesModule/Soybean/Soy.htm. Downloaded December 01, 2011.//A step-by-step scheme for the development of soybean plants. Extension of University of Illinois. http://weedsoft.unl.edu/documents/GrowthStagesModule/Soybean/Soy.htm. Downloaded December 01, 2011.
[2] SAS Institute. 2008. SAS / STAT User's Guide, Version 9.2. SAS Institute, Inc., Cary, North Carolina, USA
[3] Churakov A.A. Influence of varieties and elements of agricultural technology on the formation of soybean productivity in the Krasnoyarsk forest-steppe. In Russian // Влияние сорта и элементов агротехники на формирование урожайности сои в красноярской лесостепи. Novosibirsk, 2009, P. 9
[4] Atabaeva H. Соя. in Uzbek. // Soy. (pamphlet) – Tashkent, 2004. P.7-10
[5] Ermatova D. Innovative Technologies of Planting oil Crops. in Uzbek//Moyli ekinlarni etishtingirting innovative tehnologalari - Toshkent, 2019. P.43-55
[6] Lukomets V.M. Innovative technologies for the cultivation of oilseeds. In Russian// Инновационные технологии возделывания масличных культур.— Krasnodar, 2017.