

Pumice (Bims) Stone; Plant Breeding in Agriculture instead of soils.



Additional product as organic or inorganic materials are using on plant breeding which are solid or composed materials so those must aid to planting and eliminate to unenviable situation.

Solid or composed material must have some features which will use ,

1. It must supply enough air ventilation to plant's root. It must never have problem for air ventilation of plant's root under much irrigation.
2. It must have enough capacity to holding water inside ,holding water must be under low tensions.
3. It must be stable against chemical, physical and biological impressions.
4. It must be purified against unenviable seeds ,diseases and parasites.
5. It must not have any toxin materials inner side of them.
6. It must be homogeneous ,it must supply enough quantity in enough time period as homogeneous.
7. It must supply under very fit price by this features which was shown upper pages.And also economical.

There is high potential to use in without soil's area, pumice and perlite are special product to use. There are much bonanza of pumice stone and perlite in our country. High energy capacity of perlite must spend and to be dilated then using to plant breeding products so increase cost application. Pumice stone can use in application without dilution. There must just need to have screening and cracking plant which were manufacturing dimension of demands.

Pumice stone as conformable to TS standards which has been characterized as disconnected spaces ,sponge appearance,essential silicate,less than 1,0 gram / cm³ as volume mass ,hardness is 6 on mohs scala,features as glass fibre and volcanic origin. There are many spaces as macro dimension to micro dimension during to cooling period by throw out gas from inner side.It is low permeability which in case generally spaces were disconnected with each other. Pumice stone (Bims) has different features which has non-crystal water,colours and porosity than equal volcanic products.It is very lightweight ,can swim upon water ,very high insulation ability .Pasinler's pumice of Erzurum and Erciş's pumice stone of Van has been compared with perlite so which was most available to use in plant breeding with out soils.So those pumice stone are more available to use in hot houses as plant breeding's products under this features. By the test applications , results appeared as permeable is enoughly , absorption water capacity is high under low tensions,porosity is high so it is very available ventilation,there was no problem for pH and EC under natural environment,regarding to ensure very easy by economical materials ,it is more available product to use.

By the experiment on the tomatoes in Iceland;it is same efficiency by pumice stone as same as stone wool, it is also environment- friendly and low cost materials therefor it can more available product to use on plant breeding areas without soils.

On plant breeding by pumice stone,the efficiency of cucumber are much high than perlite and soil plant. In addition to , pumice stone has very low cation level and very low for tampon capacity. So it mean that may fast changing on results of pH , salt,commodities on plant's root therefor it can appear to damages on the plant's root.

On plant breeding with out soil ,commodities solution must be 5,5 between 6,0 pH. pH resistance capacity has been given a name as tampon capacity. During plant's root were absorbing anions and cations on with out soil's area ,then solution's pH can be change fastly . If tampon level is higher, during pH level fast changes then there may less effect to plant breeding . Productivity and plant's nutrition which has been geared to capacity of cation diffusion that may increase by down thickness of textures and up to organic material during increasing then Fe and Al oxits may increase low percentage. pumice stone instead of those two features which were explained upper line, may decrease to productivity and having more risk. Therefor Pumice must apply with other products together which makes improve those features so it can appears good results.



SUMMARY ;

Replacing soils by products must have ventilation ,drainage,absorbing water and transmitting water with out any problem occurred by inner porosity cells,having cation diffusion ability which was more important for nutrition of plant, thermal capacity was high , salt and thermal conductivity are low so those are most wanted features for it. Pumice stone (Bims) have low cation diffusion ability so there is no problem to use in plant breeding area with out soils.It may just decrease good results by applying nutrition solution many time.

For high productivity and advantage plant breedings , pumice stone (Bims) must apply or mix with other products which has high cation diffusion capacity. It has been explained by upper page ,Zeolit which was more capacity in Turkey and also very cheap material,no need to proposal application or manufacturing,with also high cation diffusion capacity that can apply or mix with pumice stone to use in plant breeding.

By this mixtured materials which was including pumice stone so also protected to good features of pumice stone then it can arrange application periods very easy and saving to nutrition solution.Plant would use to very well to nutrition solution then productivity can increase.It must calculate to mixturing results and granule dimensions of Zeolit and Pumice stone for different plants and vegetables which are most important.

Ö. Anapalı & S. Örs

Atatürk University, ERZURUM of TURKEY