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Role of cropping systems in forage production

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India is having the largest livestock population of 520 million heads, which is about 15% of world livestock population. The productivity of animals depends upon availability of nutritious and adequate feed and fodders. Due to day by day increase in the cost of concentrate feed, it is not affordable to the farmers to purchase such feed and therefore generally feed the animals on available low quality green and dry fodder. The productivity of our livestock often remains low due to inadequate and nutritionally unbalanced supply of feed and fodder (IGFRI, 2011). The national effort towards ensuring adequate availability of livestock products like milk, meat, eggs and wool is hampered to a greater extent due to shortage of nutritive forage from grasslands and fodder crops. Unfortunately, at present the country faces a net deficit of 63 per cent green fodder and 24 per cent dry fodder. In India cultivated fodder is limited to 4.9 per cent of the total cropped area .The total area under cultivated fodder is only 8.6 million ha on individual crop basis(Kumar *et al*., 2012). There is need to meet the fodder demand of increasing number of livestock and also enhance their productivity from the meagre land. Since human population is increasing at alarming rate the per capita availability of land is also declining which leads more pressure on meagre land to fulfil the food requirement of the larger masses. Hence, it is big challenge in front of us to utilize the meagre land wisely with its fullest potential to produce the fodders to the animals .That could be achieved by adopting suitable cropping systems. The cropping system with forage crops provides potential alternative to overcome the fodder problem as it utilizes the resources more efficiently. It also provides the balanced diet to the animals due to inclusion of legume and cereal fodder crops together.

Cropping system : Cropping pattern and its management on the farm to derive benefits from a given resource base under specific environmental condition is known as cropping system.Various type of cropping systems used in forage crop production are as follows.

Intercropping : Intercropping is the cultivation of two or more crops simultaneously on the same field, with row arrangement having different growth habits, canopy structure, rooting pattern and offering little or no mutual competition eg. Sorghum + cowpea or Maize + cowpea are the common forage intercropping systems followed in India.

Peralmillet + Cowpea intercropping

Maize + Bean intercropping

Advantages :

– Intercropping of cereals/grasses with legumes helps to improve herbage quality, increase biomass production and economize the fertilizer usage due to enrichment of soil.

– This system also ensures efficient land utilization, suppression of weeds and to protect against aberrant weather conditions.

– The cereals and legumes grown together are rich in carbohydrates and proteins, respectively. Therefore such different fodders fulfill the nutritional requirement of the animals simultaneously.

– Intercropping system ensures better utilization of plant nutrients from different soil layers due to inclusion of different growth habit crops.

– Reduce pest and disease incidence and thereby reduce the cost on spraying insecticides and fungicides.

Mixed cropping : Growing two or more than two crops simultaneously without distinct row arrangement is called as mixed cropping. Mixed cropping also helps to enhance the fertility of the soil, improves overall productivity and produce nutritionally different types of forages required to meet the diversified needs of the livestock from same

land. Since two or more than two different growth habit crops are taken together, it also reduces the financial risk occurred due to any pest and disease incidence or any natural calamities.

Sequence cropping :

Sequence cropping is the sowing of the succeeding crop and harvesting of preceding crop on same piece of land in more or less succession. Growing such crops in succession helps to supply the fodder regularly throughout year. In forage sequence cropping cereal fodder crops like sorghum, maize and pearl millet etc. are rotated with legume fodder crop like cowpea, berseem and guar etc.

Advantages :

– Soil fertility is restored by fixing atmospheric nitrogen, encouraging microbial activity, avoiding accumulation of toxin and maintaining physico-chemical properties of the soil.

– Agricultural operations can be done conveniently in all the crops with less competition.

– An ideal cropping sequence helps in controlling insect pest and diseases.

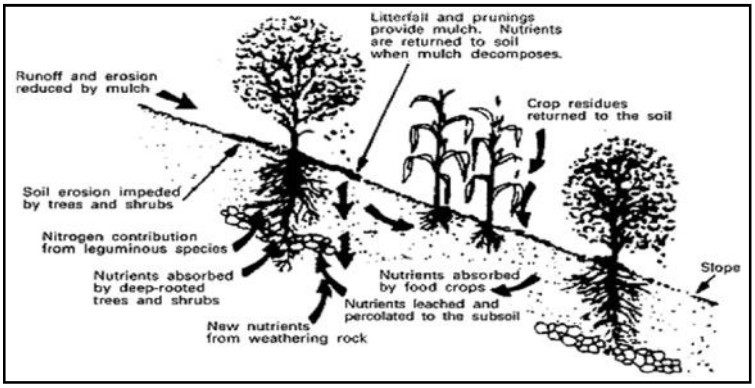
– It also controls the weeds in the field due to inclusion of fodder crops from different families.

– Proper utilization of all resources and agricultural inputs could be achieved through the crop sequence.

– The family and farm labour power, equipment and machines are well employed.

– The farmer gets different type of fodder regularly throughout year.

Alley cropping : Growing of annual or perennial crops simultaneously with perennial trees is called as alley cropping. From annual agricultural crops farmers get regular income mean while the trees mature and add to the total income from the same land. Forage alley cropping includes growing of sorghum or guar or pearl millet in between rows of leaucaena help to supply green fodders to animals regularly throughout year.



Advantages :

– It provides green fodder during the lean period of year.

– Higher total biomass production than arable crops

– Efficient utilization of land and offseason precipitation

– Soil and water conservation is achieved

– Regular supply of green fodder even during fodder shortage.

Conclusion : The green and dry matter yield of forage crops can be enhanced by adopting suitable forage cropping systems such as intercropping, mixed cropping, sequence cropping and alley cropping. It will ensure supply of adequate and good quality fodders to the livestock also it will utilize the resources at its fullest capacity.

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