A New Probe into the Calculating Method of the Pasture Ecological Livestock Capability

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Introduction Overgrazing is one of the most important elements which can cause serious pasture degradation . In order to protect pasture ecology ,decrease the pasture degradation ,utilize pasture resourse reasonably and accelerate the sustainable development of the pasture husbandry ,it is significant to calculate the livestock capability accurately . However ,the livestock calculated by the traditional method has a large difference from the fact production . Therefore ,based on the protection of pasture ecology ,a new calculating method of pasture ecological livestock capability is put forward as follows .

Calculating method of livestock capability

$$C_w = \frac{(Y_w \times I_r \times N_1 \times E_w + Y_f \times N_2 + F \times N_3) \times W}{(C_o \times Q_c + C_i \times Q_c + C_m \times Q_L + C_y \times Q_L) \times D_w}$$

$$C_s = \frac{(Y_s \times I_r \times N_2 \times E_s) \times W}{(C_o \times Q_c + C_i \times Q_c + C_m \times Q_c + C_y \times Q_c) \times D_s}$$

The pasture ecological livestock capability in winter : C_w The pasture ecological livestock capability in summer : C_s Hay Storage in winter : Y_w Summer pasture yields : Y_s Intake rate : I_r Coefficient of pasture ecological function protection : E_w (winter) ,E_s (summer) Coefficient of climate risk : W Coefficient for converting the hay in winter into standard green hay : N_1 Coefficient for converting the grazing in summer into standard green hay : N_2 Total feedstuff quantity : F Coefficient for converting the feedstuff into standard green hay : N_3 Total green hay storage : Y_f Quantity of daily standard Green hay for keeping normal nutrition level of cattle : Q_c Quantity of daily standard Green hay for keeping a lower nutrition level of cattle : Q_L Quantity of pregnant Cow : C_o Quantity of Calf : C_i Quantity of bull : C_m Quantity of adult cattle : C_y ,Grazing days in winter : D_w Grazing days in summer : D_s

Results and discussion Lacking of forage in winter and spring period is one of the main causes to restrict the development of husbandry . Therefore ,the quantity of cattle should be reduced to a reasonable range at the end of the autumn ; meanwhile ,it is also the best time for herders to sell cattle . In a word ,the end of the autumn should be taken as the basic point to calculate the livestock capability . The quantity of the cows used for propagation decides the cattle quantity in the next year even a longer period . Therefore ,it is limited to calculate only the total livestock ,but the quantity of the cows for propagation should be paid attention as well . In order to maintain herders income and the balance of ecology ,the advantage of the characteristics of cattle compensatory metabolizing can be taken so as to decrease the daily feed intake per cattle properly ,ultimately to achieve the purpose of guaranteeing a certain cattle quantity in the next year . In winter and spring period ,a low nutrition level is fit for adult cattle and bull ,but normal nutrition level is needed for pregnant cow and calf (supplement proper feedstuff) . Nutrition of hay in spring and winter period is different from that of green grass in summer and autumn period ,in order to calculate the livestock capability accurately ,all the quantities of hay and green grass should be converted as standard green hay . In order to ensure a normal implementation of pasture ecological function ,the coefficient of pasture ecological function protection should be put forward . The climate risk happens with a stated periodicity . Therefore ,the influence of potential climate disaster elements to the livestock capability should be predicted during the calculating .

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