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A NOTE ON OPTIMUM AND ECONOMIC DOSES OF NITROGEN AND NITROGEN UTILISATION EFFICIENCY OF SUNFLOWER

With the object of studying the effect of nitrogen on growth and yield and to fix an optimum dose of nitrogen for sunflower, an experiment was conducted at the College of Agriculture, Vellayani during 1974 with three levels of nitrogen viz; 40, 80 and 120 kg per hectare. The yield of dried seeds was recorded. Response of yield per unit of applied nitrogen was calculated as suggested by Cochran and Cox (1957) using the formula, Response = yield of treatment - yield in control/Quantity of nitrogen applied.

Productive efficiency (yield per unit of recovered nirogen) was calculated as follows: Productive Efficiency = yield in treatment - yield in control/Nitrogen uptake in treatment - Nitrogen uptake in control. The quadratic response curve was found to be the best fit. The response model calculated was $Y = -0.1422 N^2 + 24.7575 N + 816.5$. The optimum dose of nitrogen was calculated using the formula $-b/2a$ where "a" and "b" are the parameters of the reggression equation. The optimum dose of nitrogen for sunflower was found to be 87.05 kg per hectare.

The economic dose of nitrogen was calculated using the formula: $E = -b/2a + Px/2a \times py$ where, E = economic dose, px = price of one kilogram nitrogen, py = price of one kilogram seed and a and b are parameters of the reggression equation. By putting the ptice of one kilogram of nitrogen as Rs. 5/ = and that of one kilogram, seed as Rs. 2.50, the economic dose of nitrogen to sunflower under the agro-climatic conditions of Vellayani was found to be 80.01 kilogram per hectare. The nitrogen utilisation efficiency is shown in Table 1.

The response was found to be decreasing at 120 kg nitrogen level than that was noticed at 80 kg level. The decrease at higher level is due to the fact that yield increase is not proportionate ie marginal returns go on decreasing.

The productive efficiency of nitrogen was found to be decreasing with increasing levels of nitrogen application. With increased nitrogen uptake there was a steady increase in the contribution of the nutrient for the non-productive purpose of increasing the nitrogen content of the tissues. The results obtained in the present investigation were found to agree with the observations made by Thomas Varghese (1973).

Table 1

Nitrogen utilisation efficiency of sunflower over 40 kg N/ba.

Treatment	Response	Productive efficiency
Nitrogen 80 kg/ha	7.69	11.12
Nitrogen 120 kg/ha	4.01	4.55

സംഗ്രഹം

സൂര്യകാന്തിച്ചെടിക്കാവശ്യമായ നൈട്രജന്റെ തോതു് അറിയുന്നതിനു വേണ്ടി cms ത്തിയ ഒരു പരീക്ഷണത്തിൽ, കൂടിയ വിത്തുല്പാദനത്തിനു് നൈട്രജന്റെ പരമാനുകൂല തോതു് ഹെക്ടറിനു് 87 കിലോഗ്രാമാണെന്നു് കണ്ടു. എന്നാൽ, രാസവളത്തിന്റേയും വിത്തിന്റേയും വിലകൂടി കണക്കിലെടുത്തപ്പോൾ, ഏറ്റവും ആദായകരമായ തോതു് ഹെക്ടറിനു് 80 കിലോഗ്രാം fflsicws^rfl ആയിരുന്നു.

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