The Pharma Innovation Journal 2021; 10(9): 997-1003

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2021; 10(9): 997-1003

www.thepharmajournal.com
Received: 04-06-2021
Accepted: 18-08-2021

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# Correlation and regression studies and economics in cauliflower under different drip irrigation regimes and fertigation levels

**G Sidhartha, Latheef Pasha, M Umadevi and V Ramulu**

**Abstract**
A field experiment on cauliflower with various drip irrigation and NK fertigation regimes was conducted at Rajendranagar, Hyderabad, Telangana during *rabi* 2019-2020. The experiment layout was split plot design with nine treatments, comprising of three drip irrigation regimes *viz.*, 0.6 Epan ($I_1$), 0.8 Epan ($I_2$) and 1.0 Epan ($I_3$) as main plots and three drip NK fertigation levels of control ($N_0K_0$-$F_1$), 50% recommended dose of NK ($N_{40}$ $K_{50}$- $F_2$) and 100% recommended dose of NK ($N_{80}$ $K_{100}$- $F_3$) as sub plots and replicated thrice. The independent variables significantly explained the variation in curd yield in all components like dry matter production, yield attributes and NPK uptake as evident from the high coefficient of determination ($R^2$) values which varied from 0.722 to 0.970. Dry matter production and yield attributes (curd diameter, depth, volume, curd weight plant$^{-1}$) and NPK uptake had positive regression coefficients and statistically significant at P=0.05. Drip irrigation scheduled at 1.0 Epan recorded significantly higher net returns and B:C ratio (Rs 1,79,675 ha$^{-1}$ and 1.86) than 0.8 Epan and 0.6 Epan. Drip fertigation of 100% recommended dose of NK got significantly higher net returns and B:C ratio (₹2,60,015 ha$^{-1}$ and 2.20) than 50% recommended dose of NK and control.

**Keywords:** Cauliflower; drip irrigation, fertigation, correlation, regression, Economics

## 1. Introduction
Among vegetables, cauliflower (Brassica *oleracea var. botrytis* L.) is an important cold crop, belonging to the Brassicaceae family. The edible part of cauliflower is known as curd, The curd is used in curries, soups and pickles. Cauliflower is classified as super food as it contains rich source of proteins, carbohydrates, minerals, vitamin A and C, low fat and high fibre, and it protects the human health due to presence of full of antioxidants, poly phenols, phyto chemicals which reduces the risk of aggressive prostarte cancer.
The cauliflower varieties are grouped under three categories *viz.*, early season, main season and late season varieties. Early-season varieties are sown during May to August and ready to harvest from September to December. Main season varieties are sown during September to October and are ready for harvest from December to January, while late-season varieties are sown during October to December and harvested from mid-January to April end.
The total area and production of cauliflower in India is about 0.45 M ha and 8.67 Mt, respectively [1]. West Bengal, Bihar and Madhya Pradesh are top three states in cauliflower cultivation. In Telangana, vegetables are cultivated in an area of 0.14 M ha and total vegetable production is 2.7 M t. In Telangana, cauliflower is grown in an area of 1580 ha largely in per urban areas.
In vegetable cultivation, especially in cauliflower, irrational water and nutrient management system not only caused unnecessary wastage of water and fertilizer resources, but also led to shallow groundwater nitrate pollution and other environmental problems [2]. Water and fertilizer are considered as the important inputs for obtaining higher yield. Economic use of these inputs is crucial as they are limited in nature and becoming costlier day by day. It is the need of the hour to utilize water and fertilizer judiciously by efficient ways to enhance the input use efficiency on sustainable basis.
Cauliflower has wide range of adaptation to diverse climatic conditions. It can be grown in all types of soil with good soil fertility and water regime. In light soils, cauliflower is more sensitive to water stress, therefore adequate moisture supply is most important. In view of rapid expansion of vegetable crops are under micro irrigation. Earlier studies on cauliflower under drip fertigation revealed that different levels of NK fertigation and drip irrigation

regimes had significant effect on growth, yield attributes and yield, nutrient uptake. Study on different drip irrigation regimes (60, 80 and 100% CPE) and drip fertigation levels (80,100 and 120% RDF and furrow irrigation with 100% RDF) revealed that irrigation scheduled at 80% CPE with 80% RDF recorded higher curd yield (28.58 t $ha^{-1}$) [3]. In another study under drip irrigation where irrigation scheduled at 80% PE with 100% RDF recorded higher curd yield (25.6 t $ha^{-1}$) [4].

In this context, there is a need to develop the location specific crop water requirement and fertigation levels for getting higher water and fertilizer use efficiency. Keeping in view of the above, the present experiment was conducted with an objective to study the nitrogen and potassium fertigation levels on growth, yield and N, P, K uptake in cauliflower.

## 2. Materials and Methods

### 2.1. Characterization of Study Area

The present experiment was conducted at Water Technology Centre, Professor Jayashankar Telangana State Agricultural University (PJTSAU), Rajendranagar, Hyderabad, Telangana during *rabi* 2019-2020. The experimental location is situated at 17°19' 18" N latitude, 78°24' 18" E longitude and at an altitude of 527m above mean sea level in the Southern Telangana Agro-Climatic Zone in Telangana State. Cauliflower was grown in open field under drip irrigation system. The experimental soil was sandy loam in texture having moderate infiltration rate, slightly alkaline in reaction and moderately saline. The fertility status of the experimental soil was low in organic carbon, medium in available nitrogen, high in available phosphorus and potassium contents.

### 2.2. Experiment Details and Cultivation Management

The experiment was laid out in a split plot design with nine treatments, comprising of three drip irrigation levels *viz.*, drip irrigation scheduled at 0.6 Epan ($I_1$), 0.8 Epan ($I_2$), 1.0 Epan ($I_3$) as main plots and three drip NK fertigation levels of control ($N_0K_0$-$F_1$), 50% recommended dose of NK ($N_{40}$ $K_{50}$-$F_2$) and 100% recommended dose of NK ($N_{80}$ $K_{100}$- $F_3$) as sub plots and replicated thrice. Irrigation scheduling was done based on daily evaporation data recorded from USWB class 'A' open pan evaporimeter. The recommended dose of fertilizer was 80:80:100 kg N-$P_2O_5$ -$K_2O$ $ha^{-1}$ were applied in the form of urea, single super phosphate and white muriate of potash. A common dose of 80 kg $P_2O_5$ $ha^{-1}$ through SSP was applied as basal dose in all the treatments and N and $K_2O$ applied as fertigation once in four days (Table 1). The crop growth period was from 15th November 2019 to 23rd February 2020 (100 days) including of nursery period. 25 days old seedlings were transplanted at 50/40cm × 45 cm in paired row method. Weed, pest and disease management was done as per the recommendations of the university.

### 2.3. Data Collection on Growth and Yield Parameters, NPK Analysis and Economics

The data was recorded on growth parameters like plant height, number of leaves $plant^{-1}$, dry matter production (g $plant^{-1}$), yield attributes *viz.*, curd diameter (cm), curd depth (cm), curd volume ($cm^3$), curd yield (t $ha^{-1}$).

Pounded samples of leaf and curd at harvest were used for nitrogen content (%) estimation by the micro Kjeldhal method [5] using Kelplus Supra LX - analyzer. The di-acid digested plant and curd samples were analyzed for phosphorus content by Vanado-molybdo phosphoric acid [6]. The intensity of yellow colour developed was measured by using UV-VIS spectrophotometer (Make - Systronics, Model -108) at 420 nm. leaf and curd potassium content in the di-acid was determined by using flame photometer (Make - Elico, Model - CL 361) [5].

The N, P and K uptake at harvest was calculated by using nutrient concentration and dry matter yield or curd yield as follows.

$$\text{Nutrient uptake (kg ha}^{-1}) = \frac{\text{Nutrient content (\%) x Dry matter (kg ha}^{-1})}{100}$$

### 2.4. Statistical Analysis

The data on various parameters collected from the experiment were statistically analyzed by analysis of variance (ANOVA) for split plot design [7]. Critical difference was worked out at five per cent probability level when the treatment differences were found significant and the values were furnished. The treatment differences that were not significant were denoted by non significant (NS).

The expenditure incurred on seed, fertilizer, pesticides, irrigation, labour and machinery was worked out from field preparation to harvest of cauliflower and expressed as ₹ $ha^{-1}$. Gross monetary returns were worked out as per the treatment by multiplying the curd yield with the prevailing market price of cauliflower (₹ $kg^{-1}$). The treatment wise net monetary returns were calculated by subtracting the cost of cultivation from the gross monetary returns. Benefit: Cost ratio was calculated by dividing gross returns with cost of cultivation for each treatment. The formula is given below.

$$\text{Benefit: Cost ratio} = \frac{\text{Gross returns (₹ /ha)}}{\text{Cost of cultivation (₹ /ha)}}$$

The correlation coefficient denoted by r, ranges between -1 to +1 and quantifies the direction and strength of the linear association between the two variables. The correlation between two variables can be positive indicates positive association and negative indicates negative association among two variables. Higher the $r^2$ value, stronger is the strength of association between the measured variables. Correlation between curd yield (kg ha-1) with dry matter, yield attributes, and NPK uptakes was established by adopting least square technique.

Relationship of curd yield with dry matter production, yield attributes and NPK uptake was established by using regression analysis. While doing so, the parameters for which significantly high correlation was noticed were selected for regression studies. Cauliflower curd yield (dependable variable) was assumed as a function of various growth parameters, yield attributes and uptake of NPK (independent variable) and the following straight line model and quadratic model was established by least square technique [7] as follows:

$$Y = a+ b (x)$$

Where,
Y = fresh fruit yield (kg ha-1)
a = Y-axis intercept
b= Regression coefficient x= independent variable

## 3. Results and Discussion

### 3.1. Growth Parameters

Dry matter production was significantly influenced by both drip irrigation levels and drip NK fertigation levels. Interaction was found to be non significant (Table 2). Dry matter production was significantly higher in drip irrigation scheduled at 1.0 Epan in plant, curd and total dry matter at harvest than 0.8 Epan and 0.6 Epan respectively. Total plant dry matter at harvest was comparable between 0.8 and 0.6 Epan. This might be due to rapid growth by maintenance of adequate moisture supply and better nutrient mobilization which manifested in higher plant height and more number of leaves plant$^{-1}$ ultimately higher dry matter production. Similar results were found by Sohail *et al.* (2018) [9].

Increase in drip NK fertigation level from $N_0K_0$, 50% recommended dose of NK to 100% recommended dose of NK significantly increased the dry matter production plant$^{-1}$ in plant, curd and total dry matter at harvest respectively. This could be due to continuous supply of nutrients in small quantities around the root zone through drip irrigation facilitates better nutrient uptake and photosynthesis leads to luxurious crop growth reflected in the dry matter production plant$^{-1}$ of cauliflower plant. The above results are akin with the outcome of Kishor (2019) [11], Ghadhavi *et al.* (2017) [12] and Sohail *et al.* (2018) [9] who got significantly higher dry matter plant$^{-1}$ at 100% RDF than other doses.

The regression of fruit yield on dry matter production at 30, 45 DAS and harvest are presented in Table 1 and illustrated in Figure 1. Correlation between curd yield and dry matter production at 30, 45 DAS and harvest was highly significant as it evident from the high coefficient of determination ($R^2$) values were 0.86, 0.86 0.94 respectively at P=0.01.

### 3.2. Yield Attributes and Curd Yield

Drip irrigation scheduled at 1.0 Epan recorded significantly higher curd diameter, depth and volume than 0.6 Epan and on par with 0.8 Epan (Table 2). Drip irrigation at 0.8 Epan recorded significantly higher curd diameter, depth and volume than 0.6 Epan. Curd diameter, depth and volume were significantly increased with every increment in NK fertigation level from 0 to 100% recommended dose of NK fertigation. Drip fertigation at 100% recommended dose of NK recorded significantly higher curd diameter, depth and volume than 50% recommended dose of NK and $N_0K_0$.

Curd yield was significantly higher in drip irrigation scheduled at 1.0 Epan (18.7 t ha$^{-1}$) than 0.8 Epan (17.1 t ha$^{-1}$) and 0.6 Epan (15.0 t ha$^{-1}$) (Table 2). Curd yield at 0.8 Epan was significantly higher than 0.6 Epan. This might be due to that, the optimum moisture in the vicinity of root zone throughout the crop growth period enhanced the vegetative growth in the form of higher plant height, number of leaves plant$^{-1}$ and dry matter production of the crop thereby increase in the photosynthesis and efficient translocation of photosynthates towards the reproductive organ i.e., curd, which increased the curd diameter, depth, volume and curd weight plant$^{-1}$ finally resulted into increased curd yield of cauliflower. Similar findings are reported by Khodke and Patil (2012) [13], Popale *et al.* (2012) [14] and Biswal (2016) [15].

Curd yield was significantly increased with every increment in NK fertigation level from 0 to 100% recommended dose of NK fertigation. Drip fertigation at 100% recommended dose of NK recorded significantly higher curd yield (23.8 t ha$^{-1}$) than 50% recommended dose of NK (19.7 t ha$^{-1}$) and $N_0K_0$ (7.2 t ha$^{-1}$). Curd yield is a cumulative effect of yield attributes like curd diameter, depth, volume and curd weight plant$^{-1}$. Curd yield increased gradually with increase in 100% recommended dose of the N and K fertigation level. This might be due to the continuous supply of nutrients in the root zone of the crop through drip fertigation, which created favourable conditions for growth and development by way of increasing metabolic activities in the plant system. These results are in harmony with the findings of Popale *et al.* (2012) [14], Kapoor and Sandal (2017) [8], Ghadhavi *et al.* (2017) [12] and Kumar and Sahu (2013) [16].

The regression of curd yield on curd weight, diameter and depth is presented in Table 1 and illustrated in figure 2. Correlation between curd yield and curd weight, diameter and depth were highly significant as it evident from the high coefficient of determination ($R^2$) value 0.96, 0.88 and 0.96 respectively at P=0.01.

### 3.3. NPK Uptake

NPK uptake were significantly higher in irrigation scheduled at 1.0 Epan than 0.8 and 0.6 Epan during all stages. Drip NK fertigation levels significantly increased the NPK uptake with each increment in NK fertigation level from N0K0 to 100% recommended dose of NK at all stages.

The results were in accordance with the findings of Kumar and Sahu (2013) [16], Kapoor and sandal (2017) [8], Singh *et al.* (2017) [4] and Shams and Farag (2019) [17] who reported higher NPK uptake at higher irrigation levels. Jahan *et al.* (2014) [18] and Kishor (2019) [11] reported similar results with respect to more NPK uptake at higher fertigation doses.

The regression of curd yield on NPK uptake at different stages is presented in Table –1 and illustrated in figure 3,4,5. Correlation between curd yield and NPK uptake were highly significant as it evident from the high coefficient of determination ($R^2$) values ranged from 0.59 to 0.97 at P=0.01.

### 3.4. Economics

Gross and net returns and B:C ratio were influenced significantly by both drip irrigation levels and drip NK fertigation levels. But interaction was found to be non significant (Table 3).

Drip irrigation scheduled at 1.0 Epan significantly increased both gross and net returns and B:C ratio (₹ 3,73,644 ha$^{-1}$, ₹ 1,79,675 ha$^{-1}$ and 1.86) respectively than 0.8 Epan (₹ 3,41,622 ha$^{-1}$, ₹ 1,48,,134 ha$^{-1}$ and 1.71 respectively) and 0.6 Epan (₹ 2,99,022 ha$^{-1}$, ₹ 1,05,775 and 1.50 respectively). The results were in accordance with the findings of Singh *et al.* (2017) [4] and Jha *et al.* (2017) [19]

Drip NK fertigation levels significantly increased the gross and net returns and B:C ratio at each increment level of drip NK fertigation from control (N0K0) to 100% recommended dose of NK. Gross and net returns and B:C ratio were significantly higher at 100% recommended dose of NK (₹ 4,75,622 ha$^{-1}$, ₹ 2,60,015 ha$^{-1}$ and 2.20) than 50% recommended dose of NK (₹ 3,93,644 ha$^{-1}$, ₹ 2,00,147 ha$^{-1}$ and 2.03) and control (₹ 1,45,022 ha$^{-1}$, ₹-26,577 and 0.84). The above findings are in agreement with the results of Singh *et al.* (2017) [4] and Kishor (2019) [11]

**Table 1:** Correlation and regression studies between curd yield vs growth, yield attributes, nutrient uptake and quality parameters of cauliflower as influenced by different drip irrigation and fertigation levels.

| S. No. | Parameter | Stage of the crop (DAT) | r2 value | Regression equation | S. No. | Parameter | Stage of the crop (DAT) | r2 value | Regression equation |
|---|---|---|---|---|---|---|---|---|---|
| 1. | Plant height (cm) | 15 | 0.38 | | 9. | Vitamin C (mg 100g$^{-1}$) | Harvest | 0.87** | y = 0.526x - 25.19 |
| | | 30 | 0.74* | y = 1.462x + 5.374 | 10. | Reducing sugar (%) | Harvest | 0.85** | y = 8.141x + 9.537 |
| | | 45 | 0.89** | y = 1.462x + 5.374 | 11. | Non-reducing sugar (%) | Harvest | 0.80** | y = 6.899x + 5.241 |
| | | Harvest | 0.93** | y = 1.333x - 35.64 | 12. | Colour of the curd | Harvest | 0.93** | y = 2.078x - 126.8 |
| 2. | Number of leaves plant$^{-1}$ | 15 | 0.19 | | 13. | Nitrogen uptake (kg ha$^{-1}$) | 30 | 0.72* | |
| | | 30 | 0.21 | | | | 45 | 0.88** | y = 1.462x + 5.374 |
| | | 45 | 0.66* | | | | Harvest (Leaf+Curd) | 0.94** | y=0.103x + 0.327 |
| | | Harvest | 0.71 | | 14. | Phosphorous uptake (kg ha$^{-1}$) | 30 | 0.85** | y = 435.9x + 7.068 |
| 3. | Dry matter (g plant$^{-1}$) | 30 | 0.91** | y = 1.462x + 5.374 | | | 45 | 0.85** | y = 435.9x + 7.068 |
| | | 45 | 0.89** | y = 1.462x + 5.374 | | | Harvest (Leaf+Curd) | 0.91** | y=0.430x + 4.809 |
| | | Harvest | 0.95** | y = 0.111x - 3.440 | 15. | Potassium uptake (kg ha$^{-1}$) | 30 | 0.89** | y = 1.462x + 5.374 |
| 4. | Leaf chlorophyll content | 15 | 0.34 | | | | 45 | 0.87** | y = 1.462x + 5.374 |
| | | 30 | 0.75** | y = 1.462x + 5.374 | | | Harvest (Leaf+Curd) | 0.94** | y=0.239x + 2.495 |
| | | 45 | 0.62* | y = 1.462x + 5.374 | 16. | Sulphur uptake (kg ha$^{-1}$) | 30 | 0.74* | y = 435.9x + 7.068 |
| | | Harvest | 0.84** | y = 1.462x + 5.374 | | | 45 | 0.75** | y = 435.9x + 7.068 |
| 5. | Leaf Area Index (LAI) | 30 | 0.94** | y = 1.462x + 5.374 | | | Harvest (Leaf+Curd) | 0.85** | y=9.935x + 0.772 |
| | | 45 | 0.89** | y = 1.462x + 5.374 | | | | | |
| | | Harvest | 0.92** | y = 9.476x - 5.600 | | | | | |
| 6. | Curd diameter (cm) | Harvest | 0.86** | y = 2.704x - 14.18 | | | | | |
| 7. | Curd depth (cm) | Harvest | 0.93** | y = 4.741x - 9.521 | | | | | |
| 8. | Curd weight (g plant$^{-1}$) | Harvest | 0.95** | y = 0.042x + 0.061 | | | | | |

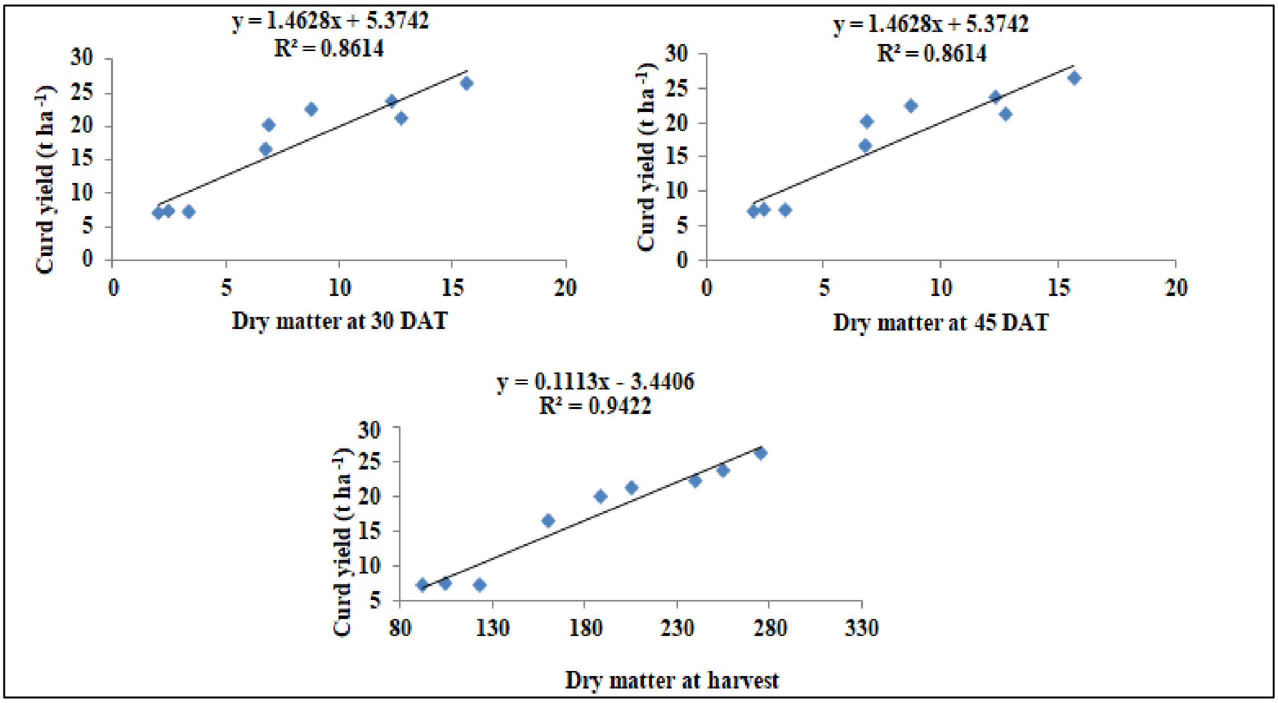


**Fig 1:** Regression of curd yield (t ha$^{-1}$) on dry matter (g plant$^{-1}$) at 30, 45DAT and harvest

**Table 2:** Growth, yield attributes and yield as influenced by different drip irrigation and NK fertigation levels in cauliflower during rabi 2019-20.

| Treatments | Plant height (cm) | No of leaves plant$^{-1}$ | Dry matter production | | | Curd diameter (cm) | Curd depth (cm) | Curd volume (cm$^3$) | Curd yield (t ha$^{-1}$) |
|---|---|---|---|---|---|---|---|---|---|
| | | | Plant | curd | Total | | | | |
| **Main plots -Irrigation levels** | | | | | | | | | |
| $I_1$: Drip irrigation at 0.6 Epan | 38.2 | 15.8 | 70.7 | 42.2 | 112.9 | 10.3 | 5.0 | 410.6 | 15.0 |
| $I_2$: Drip irrigation at 0.8 Epan | 39.3 | 17.7 | 79.0 | 49.1 | 128.1 | 11.7 | 5.5 | 492.8 | 17.1 |
| $I_3$: Drip irrigation at 1.0 Epan | 40.7 | 21.0 | 99.3 | 58.0 | 157.2 | 12.4 | 5.7 | 548.7 | 18.7 |
| S.Em ± | 0.4 | 0.4 | 1.6 | 1.1 | 2.8 | 0.2 | 0.1 | 18.1 | 0.2 |
| C.D (P=0.05) | 1.7 | 1.7 | 6.7 | 4.5 | 11.5 | 0.8 | 0.4 | 72.9 | 0.8 |
| **Sub plots - Fertigation levels** | | | | | | | | | |
| $F_1$:Control ($N_0$ $K_0$) | 32.4 | 16.1 | 54.2 | 22.4 | 76.6 | 8.6 | 3.5 | 173.9 | 7.2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| $F_2$:50% Recommended dose ($N_{40}$ $K_{50}$) | 40.8 | 18.2 | 88.1 | 58.3 | 146.4 | 11.8 | 5.7 | 403.2 | 19.7 |
| $F_3$:100% Recommended dose ($N_{80}K_{100}$) | 45.0 | 20.3 | 106.7 | 68.5 | 174.1 | 14.1 | 6.7 | 875.0 | 23.8 |
| S.Em ± | 0.7 | 0.3 | 2.2 | 1.3 | 3.4 | 0.3 | 0.1 | 12.9 | 0.6 |
| C.D (P=0.05) | 2.3 | 0.8 | 7.0 | 4.2 | 10.6 | 1.1 | 0.4 | 40.7 | 2.0 |
| **Fertigation at same level of irrigation** | | | | | | | | | |
| S.Em ± | 0.7 | 0.7 | 2.9 | 2.0 | 4.9 | 0.3 | 0.2 | 31.3 | 0.4 |
| C.D (P=0.05) | NS | NS | NS | NS | NS | NS | NS | NS | NS |
| **Irrigation at same or different fertigation levels** | | | | | | | | | |
| S.Em ± | 1.1 | 0.5 | 3.5 | 2.2 | 5.6 | 0.5 | 0.2 | 25.7 | 1.0 |
| C.D (P=0.05) | NS | NS | NS | NS | NS | NS | NS | NS | NS |

**Table 3:** Gross returns, net returns and B:C ratio of cauliflower as influenced by varied drip irrigation and fertigation levels.

| Treatments | Curd yield (t $ha^{-1}$) | Gross returns (₹ $ha^{-1}$) | Cost of Cultivation (₹ $ha^{-1}$) | Net returns (₹ $ha^{-1}$) | B:C ratio |
|---|---|---|---|---|---|
| **Main plots - Irrigation levels** | | | | | |
| I1: Drip irrigation at 0.6 Epan | 15.0 | 2,99,022 | 1,93,247 | 1,05,775 | 1.50 |
| I2: Drip irrigation at 0.8 Epan | 17.1 | 3,41,622 | 1,93,488 | 1,48,134 | 1.71 |
| I3: Drip irrigation at 1.0 Epan | 18.7 | 3,73,644 | 1,93,969 | 1,79,675 | 1.86 |
| S.Em ± | 0.2 | 4,173 | - | 4,173 | 0.02 |
| C.D (P=0.05) | 0.8 | 16,824 | - | 16,824 | 0.08 |
| **Sub plots - Fertigation levels** | | | | | |
| F1:Control (N0 K0) | 7.2 | 1,45,022 | 1,71,599 | -26,577 | 0.84 |
| F2:50% Recommended dose (N40 K50) | 19.7 | 3,93,644 | 1,93,497 | 2,00,147 | 2.03 |
| F3:100% Recommended dose (N80K100) | 23.8 | 4,75,622 | 2,15,607 | 2,60,015 | 2.20 |
| S.Em ± | 0.6 | 12,691 | - | 12,691 | 0.06 |
| C.D (P=0.05) | 2.0 | 39,538 | - | 39,538 | 0.19 |
| **Fertigation at same level of irrigation** | | | | | |
| S.Em ± | 0.4 | 7,228 | - | 7,227 | 0.03 |
| C.D (P=0.05) | NS | NS | - | NS | NS |
| **Irrigation at same or different fertigation levels** | | | | | |
| S.Em ± | 1.0 | 18,426 | - | 18,426.4 | 0.09 |
| C.D (P=0.05) | NS | NS | - | NS | NS |

Market price: ₹ 20 $kg^{-1}$ of cauliflower curd.

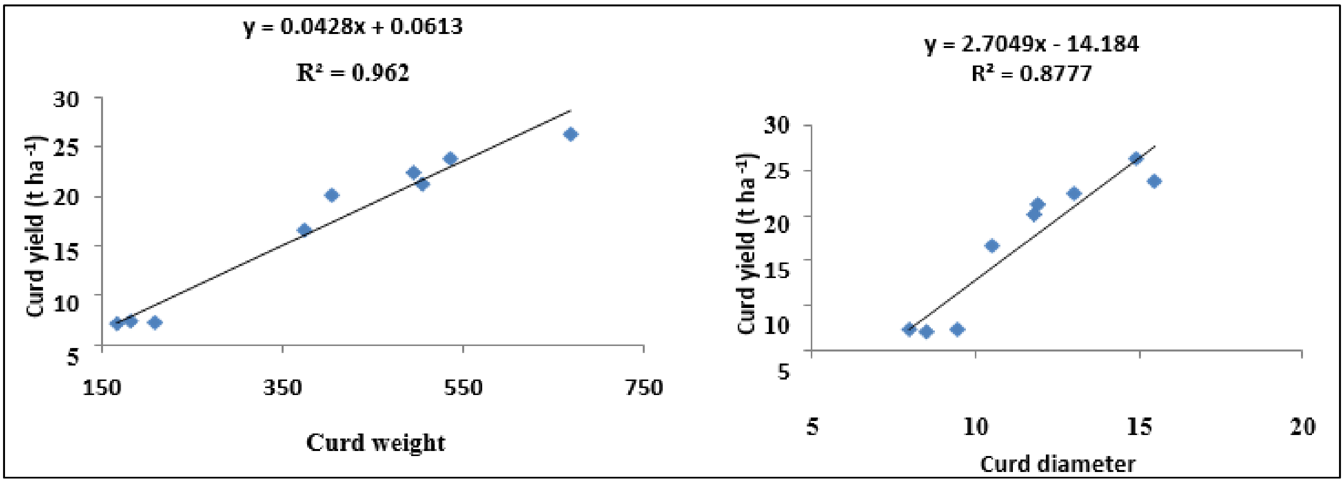


**Fig 2:** Regression of curd yield (t ha-1) on curd weight (g $plant^{-1}$) and curd diameter (cm)

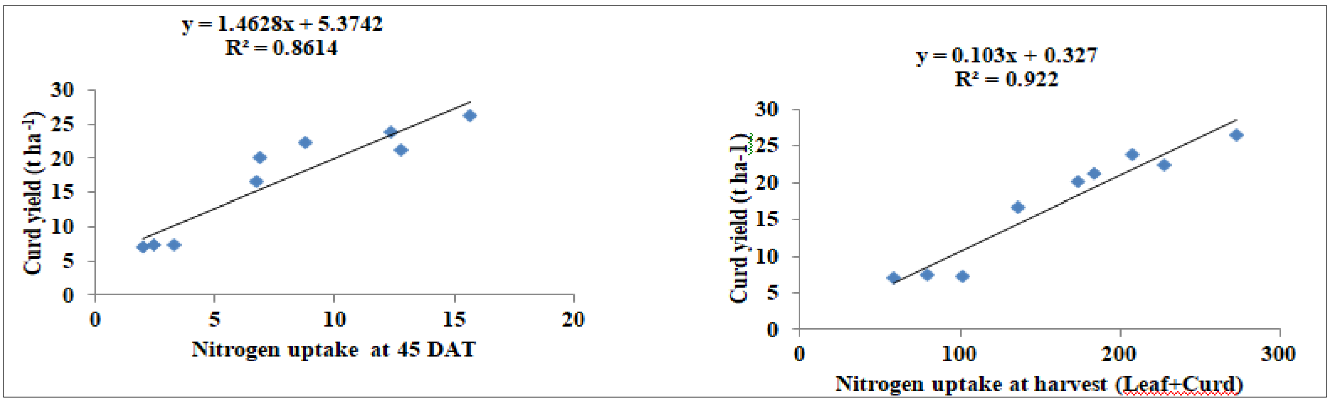


**Fig 3:** Regression of curd yield (t $ha^{-1}$) on nitrogen uptake (kg $ha^{-1}$) at 45DAT and harvest

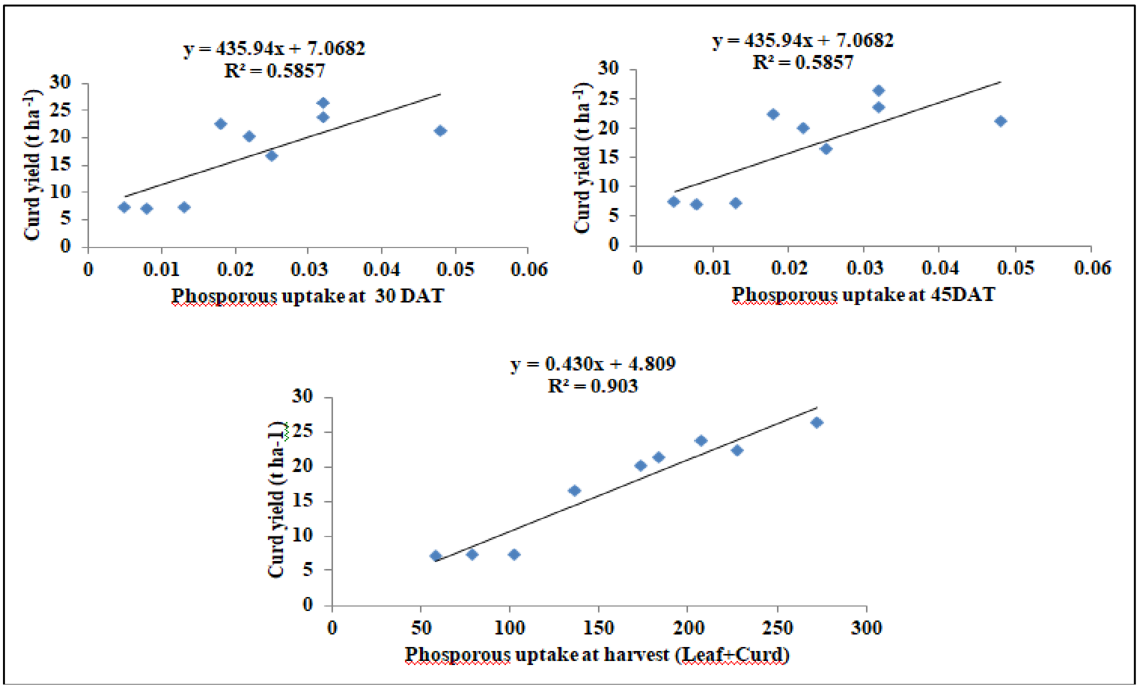


**Fig 4:** Regression of curd yield (t ha$^{-1}$) on phosporous uptake (kg ha$^{-1}$) at 30,45DAT and harvest

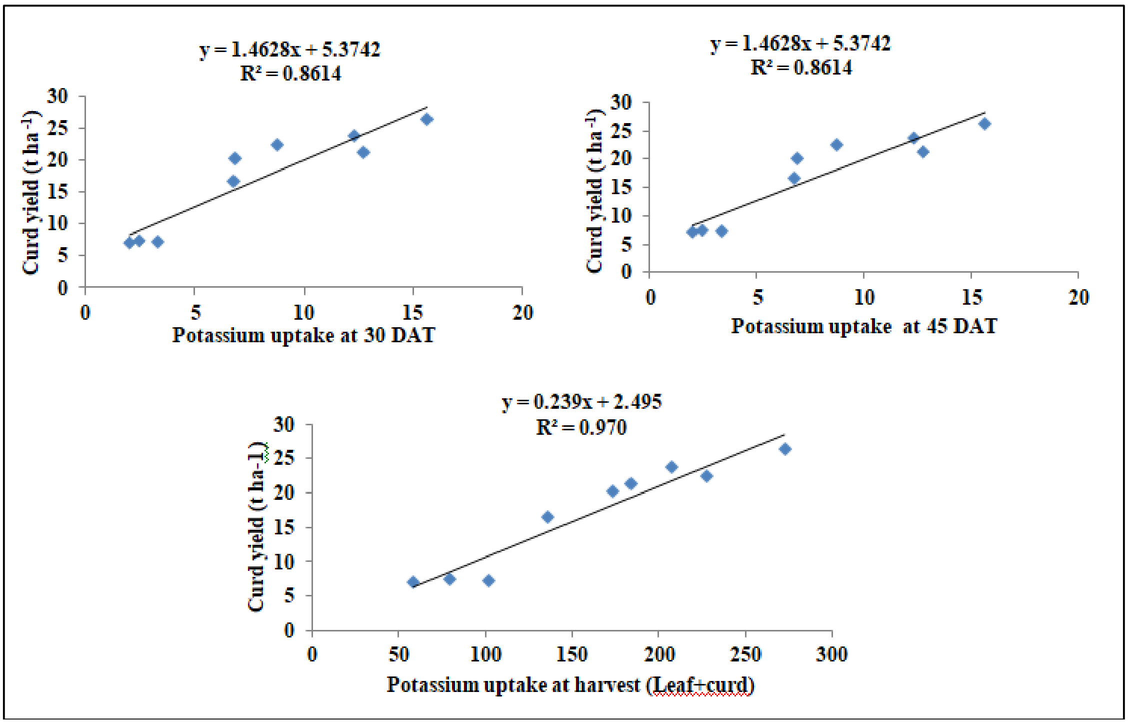


**Fig 5:** Regression of curd yield (t ha$^{-1}$) on potassium uptake (kg ha$^{-1}$) at 30, 45DAT and harvest.

## 4. Conclusion

Application of 1.0 Epan irrigation and 80 kg N, 100 kg $K_2O$ ha$^{-1}$ by fertigation in 15 number of split doses once in four days interval is recommended for maximization of yield and nutrient uptake in cauliflower cultivated in rabi season.

## 5. Competing Interests

Authors have declared that no competing interests exist.

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