

National Seminar on Agrometeorology

Crop weather relationship in *Brassica campestris* var. yellow sarson grown in Gangetic West Bengal

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BACK GROUND

- ***Brassica*, covers 13% cropped land in India, contributes 30% of the total oil seed production.**
- **This crop is highly sensitive to weather**
- **Farmers of the Lower Gangetic Plain sow *Brassica campestris* during middle of October to middle of November**
- **Wide variability on microclimatic status occurs at the time of sowing and harvest.**
- **Growth and yield of crops are well reflected by the status of various thermal indices, like GDD, PTU and HTU.**

OBJECTIVES

With this background a field experiment was carried out during the winter season of 2008-09 to assess the impact of different dates of sowing for *Brassica campestris* var. yellow sarson on:

- Status of Seed Yield, GDD, HTU and PTU.
- Correlation between phenophasic and total status of GDD, HTU and PTU with seed yield

MATERIALS AND METHODS

- **Study site: C – Block Research Farm of the University (Lat 22°58', Long 88°31'), Kalyani, West Bengal.**
- **Soil type: Sandy loam**
- **Climate: Hot-sub-humid**
- **Crop variety: Binoy (B-9)**
- **Dates of sowing: October 13th, 20th and 27th; November 4th and 11th.**
- **Base temperature: 5°C**
- **Statistical Design: R.B.D.; Replications: 4**

OBSERVATIONS

Crop: Seed Yield

Meteorological: Atmospheric temperature (07 and 14 hrs); Bright sunshine hours.

Computation:

Growing Degree Days (GDD), unit - °D

Photothermal Unit (PTU), unit – °D hr

Heliothermal Unit (HTU), unit – °D hr

FINDINGS

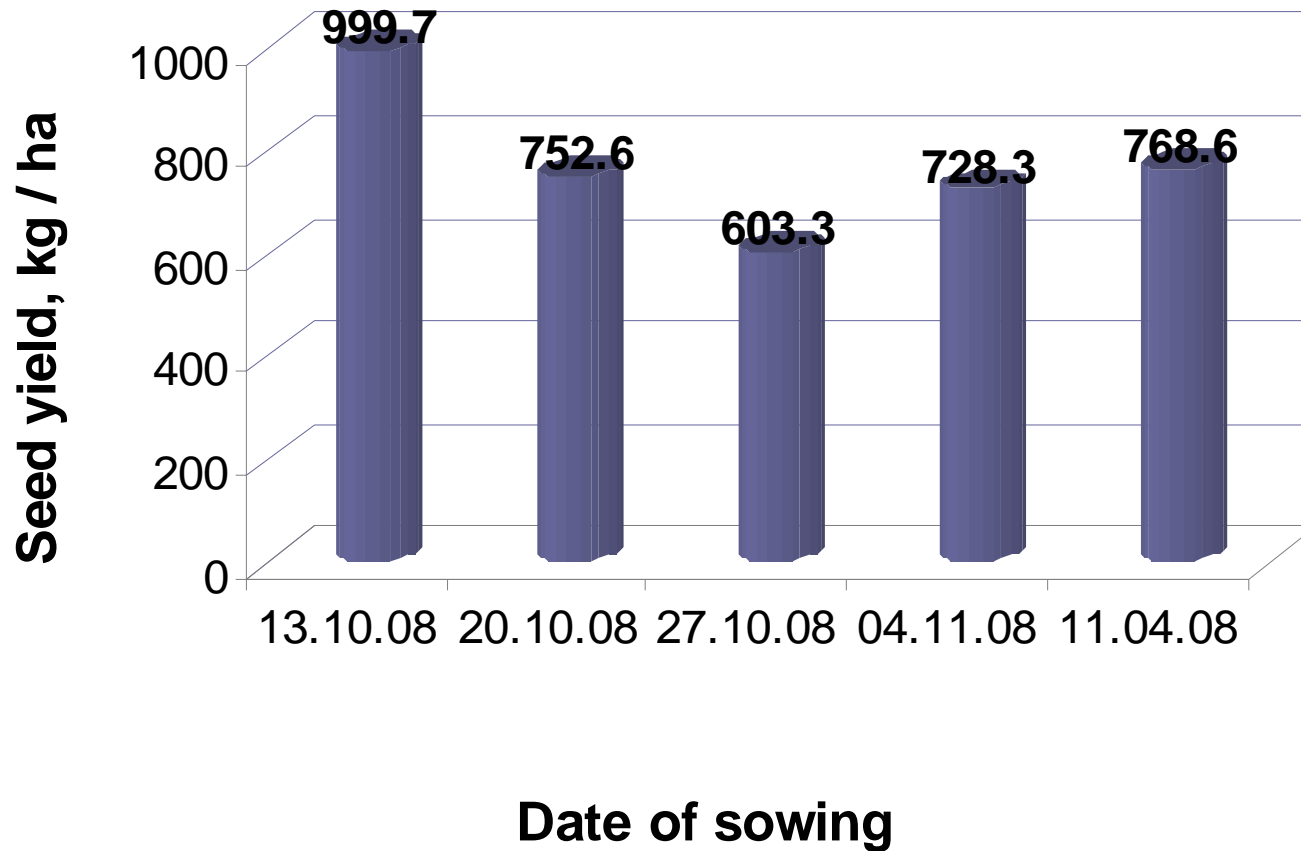


Fig. 1. Impact of date of sowing on seed yield

Table 1. Accumulated Growing Degree Days (⁰D) under different dates of sowing

Dates of sowing	GDD, ⁰ D			
	E to IF	IF to SF	SF to SM	Total
13.10.08	658(31)	365(20)	725(48)	1749(99)
20.10.08	590(29)	341(19)	768(51)	1699(99)
27.10.08	541(27)	360(20)	791(54)	1691(101)
04.11.08	497(26)	312(18)	869(58)	1678(102)
11.11.08	494(27)	283(19)	805(52)	1581(98)

E: Emergence; IF: Initiation of flowering; SF: Siliqua formation; SM: Siliqua maturity.

Values in parenthesis denotes day length of each phenophase

Table 2. Accumulated Photo thermal units ($^{\circ}\text{D hr}$) under different dates of sowing

Dates of sowing	PTU, $^{\circ}\text{D hr}$			
	E to IF	IF to SF	SF to SM	Total
13.10.08	7522	4040	7855	19417
20.10.08	6689	3752	8354	18796
27.10.08	6082	3919	8672	18674
04.11.08	5544	3502	9747	18794
11.11.08	5447	3029	8969	17446

E: Emergence; IF: Initiation of flowering; SF: Siliqua formation; SM: Siliqua maturity

Table 3. Accumulated Heliothermal units ($^{\circ}\text{D}$ hr) under different dates of sowing

Dates of sowing	HTU, $^{\circ}\text{D}$ hr			
	E to IF	IF to SF	SF to SM	Total
13.10.08	5495	3198	4344	13038
20.10.08	4784	2849	4729	12363
27.10.08	5041	2780	5081	12903
04.11.08	4556	2019	6117	12693
11.11.08	4176	1440	6207	11824

E: Emergence; IF: Initiation of flowering; SF: Siliqua formation; SM: Siliqua maturity

Table 4. Correlation of different thermal indices with seed yield

Phenophases	GDD	PTU	HTU
E to IF	0.70	0.69	0.46
IF to SF	0.19	0.21	0.32
SF to SM	-0.59	-0.56	-0.44
Total	0.39	0.40	0.18

E: Emergence; IF: Initiation of flowering; SF: Siliqua formation; SM: Siliqua maturity

CONCLUSIONS

- So far yield is concerned, middle of October is the optimum sowing time.
- Delay in sowing decreases length of first phenophase. In case of 3rd phenophase the trend is reverse.
- Variation in time of sowing has no impact on total cropping period.
- Status of thermal indices during 1st phenophase is strongly related to yield.

Thank You