Polyhouse technology to help cultivate off-season crops

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In news- The director of CSIR-CMERI, Durgapur, recently inaugurated a "naturally ventilated polyhouse facility" and laid the foundation stone of "retractable roof polyhouse" at its Ludhiana centre.

Key updates-

- This structure is being **developed in collaboration with CSIR-IHBT, Palampur** and is in the process of integrating artificial intelligence (AI) in automating the Polyhouse based on the crop and weather requirements.
- This all-weather structure will have an automatic retractable roof which will be operated based on weather conditions and crop requirements from the conditional database using PLC software.
- The retractable roof would be used to manipulate sunlight quantity, quality & duration, water stress, humidity, carbon dioxide levels as well as crop and soil temperatures.
- It is a viable technology for organic cultivation.
- It will be useful in India's all 15 different agro-climatic zones and will help farmers to cultivate off-season crops that can fetch higher value and income.

Polyhouse technology-

- A polyhouse is a specially constructed structure like a building where a **specialised polythene sheet is used as a covering material** under which crops can be grown in partially or fully controlled climatic conditions.
- The transparent material permits the entry of natural light.

- Polyhouses are also helpful in reducing threats such as extreme heat and pest attacks in crops.
- This is especially important for crops growing in the open field with no protection from the weather, and therefore its yield, quality, and crop maturity timings are changed.
- Though Conventional greenhouses have a stationary roof to reduce the effect of weather anomalies and pests, roof covering sometimes leads to excessive heat and insufficient light (early morning).
- Besides this, they are also prone to insufficient levels of carbon dioxide, transpiration and water stress.
- Polyhouses are more suitable for tropical and subtropical regions like India.
- Usually a drip irrigation system is installed inside a polyhouse for watering purposes.
- Polyhouse provides higher concentrations of Co2 to increase the production to maximum level and therefore **Polyhouse yields are way higher than open field cultivation.**
- One can grow the plants in polyhouse conditions that are otherwise impossible to cultivate in that particular climatic zone. Eg. Growing strawberries in the plains of India.

Crops that can be grown in a polyhouse are-

Floriculture crops: Cut flowers- Gerbera, Roses, Carnations, Orchids, Anthurium, Strelitzia, etc.

Exotic vegetables: Colored capsicum, Cucumber, Cherry tomato, Zucchini, etc.

Nursery plants: Ornamental indoor plants, Miniature foliaceous plants, Cacti and succulents, colorful exotic species.