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# **11. Preparation of Contingent Crop Planning and Crop Calendars Using IT Tools.**



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# 11.1 Introduction

- The Crop Calendar is a tool that provides timely information about seeds to promote local crop production. It contains information on planting, sowing and harvesting periods of locally adapted crops in specific agro-ecological zones.
- It also provides information on the sowing rates of seed and planting material and the main agricultural practices.



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## 11.1 Cont..

- This tool supports farmers and agriculture extortionists across the world in taking appropriate decisions on crops and their sowing period, respecting the agro-ecological dimension. It also provides a solid base for emergency planning of the rehabilitation of farming systems after disasters.



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State	Crop	Season	From	To	Period
ODISHA	Blackgram/Urd	Kharif	April (Beg)	June (Beg)	Sowing
		Kharif	April (Beg)	June (Beg)	Harvesting
	Greengram	Rabi	October (Mid)	January (Beg)	Sowing
	Pulses	Rabi	January (Beg)	April (Beg)	Harvesting
	Rice/Paddy	Kharif	June (Beg)	January (End)	Sowing
		Kharif	June (Beg)	August (Beg)	Sowing
		Kharif	December (Beg)	January (Beg)	Harvesting
		Rabi	December (Beg)	January (Beg)	Sowing
		Rabi	December (Beg)	April (Beg)	Sowing
		Rabi	December (Beg)	May (Beg)	Sowing
		Rabi	September (Mid)	December (Mid)	Sowing
		Rabi	September (Mid)	December (Mid)	Sowing
		Rabi	December (Beg)	May (Beg)	Sowing
		Rabi	May (Beg)	June (Beg)	Harvesting
	Wheat	Rabi	October (Beg)	November (Beg)	Sowing
		Rabi	March (Beg)	April (Beg)	Harvesting



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## 11.2 GEOGLAM

**GEOGLAM** is the Group on Earth Observations Global Agricultural Monitoring Initiative. It was initially launched by the Group of Twenty (G20) Agriculture Ministers in June 2011, in Paris. The G20 Ministerial Declaration states that **GEOGLAM "will strengthen global agricultural monitoring by improving the use of remote sensing tools for crop production projections and weather forecasting"**. By providing coordinated Earth observations from satellites and integrating them with ground-based and other in-situ measurements, the initiative will contribute to generating **reliable, accurate, timely and sustained crop monitoring information and yield forecasts**.



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## 11.2 Cont..

• GEOGLAM provides a framework which strengthens the international community's capacity to produce and disseminate relevant, timely and accurate forecasts of agricultural production at national, regional and global scales through the use of Earth Observations (EO) including satellite and ground-based observations. This initiative is designed to build on existing agricultural monitoring programs and initiatives at national, regional and global levels and to enhance and strengthen them through international networking, operationally focused research, and data/method sharing.



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# 11.3 IT application for computation of water and nutrient requirement of crops

Crop yield gaps quantify the potential for yield increases. Closing yield gaps may require more inputs, and a question is: how much? In analogy with the yield gap, the input gap is the difference between the minimum amount of input(s) required for a target yield and the input use under current practice. We developed a methodology to calculate nitrogen fertilizer requirements and input gaps and present preliminary results for maize in Africa.



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## 11.4 Methodology

- We have combined existing model approaches:
  - Potential yield and water use are calculated with a crop model as function of crop characteristics and global grid-based data of weather and soils.
  - Minimum fertilizer N requirement is calculated as function of target yield, indigenous soil N supply (SNS), applied animal manure (MAN) and grain recovery efficiency of applied fertilizer N (GRE), while maintaining soil N equilibrium, Calculation steps:





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# 11.4 Cont..

I select target DM yield

II. calculate N yield

III. calculate N application

– In maintaining soil N equilibrium, we have calculated SNS depending on the amount of crop residues left in the field and MAN depending on part of the aboveground biomass fed to animals, while GRE depends on the harvest index and N losses during the cropping cycle.

- Basic equilibrium equations of annual crop and soil N balances: a)  $N_{\text{uptake}} = N_{\text{roots}} + N_{\text{cropresidue}} + N_{\text{byproduct}} + N_{\text{grain}}$  b)  $N_{\text{deposition}} + N_{\text{roots}} + N_{\text{cropresidue}} + N_{\text{manure}} + N_{\text{application}} = N_{\text{uptake}} + N_{\text{soilLosses}}$