DEPARTMENT of AGRICULTURE, FORESTRY and FISHERIES

CROP ESTIMATES

BACKGROUND, NEED AND USES

CELC Seminar

21 April 2016

agriculture, forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Crop Estimates Committee
Oesskattingskomitee

CONTENTS

A. HISTORY

1. Under the previous Marketing Act (1968), all aspects of grain marketing were formerly controlled by the various control boards.
2. This included fixed price schemes, deliveries to the silo's, imports, exports and carry-over stocks.
3. The boards were also responsible for the provision of certain services, such as the collection of information like production estimates and the updating thereof.
4. The new Marketing Act of Agricultural Products led to the abolishment of the boards in 1997, which complicates the ease of production estimates in the deregulated environment.

A. HISTORY …

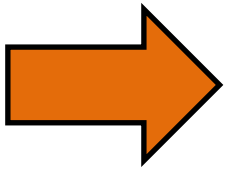
5. In a free market environment, much more emphases have to be put on planning in respect of how much to produce, where to produce, at what price, etc.
6. A new approach to crop forecasting was necessitated.
7. Accurate crop forecasts are essential to keep the market working well.
8. At a meeting of the Maize Forum during 1998, it was requested that a working group being established to deal with crop estimates matters.

B. CROP ESTIMATES LIAISON COMMITTEE (CELC)

Following this request, the CELC was established.

CELC is regarded as the WATCHDOG OVER ACTIVITIES OF CEC

ALL ROLE-PLAYERS IN INDUSTRY
SAGIS
Agbiz Grain
SACOTA
JSE (SAFEX)
Grain SA
Processors (AFMA)
Forums
Members of the CEC



ROLE

1. Defining role/Functions
2. Composition
3. Evaluate results
4. Do recommendations on:
   - ✓ Current methodologies
   - ✓ New methodologies
   - ✓ Research

C. ESTABLISHING

A new Committee was established in January 2000.

Crop Estimates Committee
Oesskattingskomitee

1. DEFINING ROLE/FUNCTIONS OF THE CEC

THE OBJECTIVE OF THE CROP ESTIMATES COMMITTEE (CEC):

"*To make available official, reliable, accurate, credible, objective and timely crop estimates*"

1. DEFINING ROLE/FUNCTIONS OF THE CEC …

ACCURACY

- Within 8%: 1st to 4th estimate vs final crop
- Within 5%: 5th to final estimate vs final crop

OBJECTIVE

- Members NO vested interest – not allowed to be involved with trading of grain and oilseeds
- Follow statistical methods – no manipulation

TIMELY

- Reflects estimate as at the third week of a month
- Release time: on day of meeting at 15:30

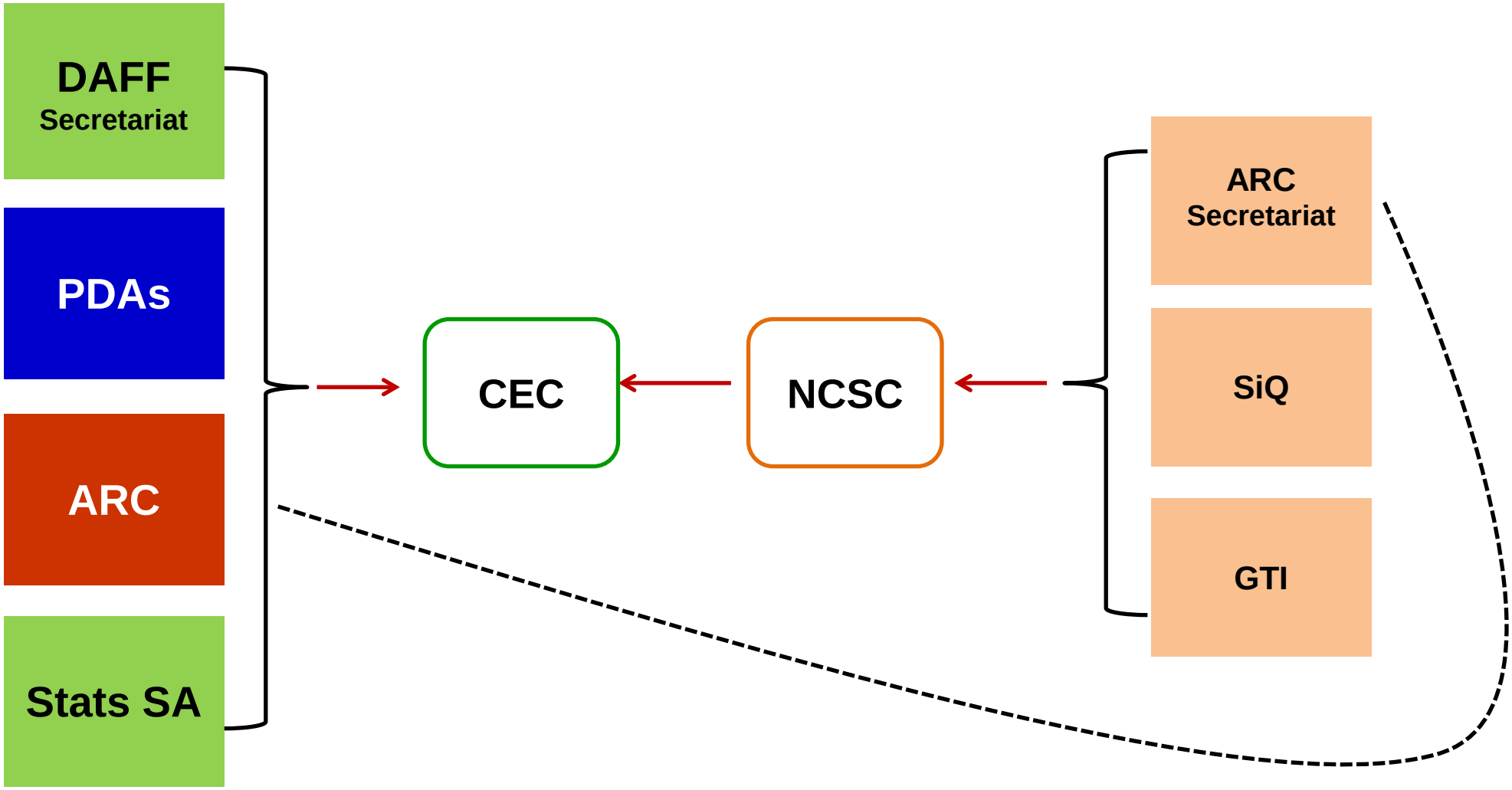
2. COMPOSITION OF THE CEC

No person with an interest in buying and selling of grains is allowed to serve on the Committee!!

- **DEPARTMENT OF AGRIC, FORESTRY AND FISHERIES** — DAFF
  - Chairperson and Secretariat
- **PROVINCIAL DEPARTMENTS OF AGRICULTURE** — PDAs
  - 9 Representatives
- **ARC** — ARC
  - ISCW
  - SGI
  - GCI
- **STATS SA** — Stats SA

Information is also received from various organisations and institutions which is NOT PART OF THE CEC

2. COMPOSITION OF THE CEC …



3. CURRENT METHODOLOGIES FOR FORECASTING – DATA INPUT SUPPLIERS

METHOD:	SOURCE:
A-LINE (Scientific/Statistical/ Objective surveys)	• National Crop Estimates Consortium ✓ PICES ✓ Telephonic survey (Farmers) • SAGIS (actual deliveries – later in the season)
B-LINE Non-probability surveys/ Crop Modelling	• DAFF (Farmers) • ARC-IDSS Model
C-LINE (Own observations/ surveys/calculations)	• PDA representatives • Reports • Forums • Agbiz Grain

A-line: Determine the area and production/yield (90%)(Benchmark)(Since 2008)

B- and C-line: Evaluate/verify inputs from A-line

D. ACTIONS TAKEN TO IMPROVE THE ACCURACY OF CROP ESTIMATES?

✓ **CONSULTANT APPOINTED**

A tender was published in December 2001 for the appointment of a consultant to conduct the development of a system for accurately estimating planted areas and forecasting yields of crops for DAFF.

The contract was awarded to the NCSC (National Crop Statistics Consortium) in March 2002.

The Consortium has developed various systems that are used for crop forecasting, namely:

- Subjective Area Frame;
- Objective Yield System; and
- PICES (Producer Independent Crop Estimates System).

✓ **INTERNATIONAL ASSISTANCE has been received from NASS of the USDA.**

D. ACTIONS TAKEN TO IMPROVE THE ACCURACY OF CROP ESTIMATES? …

✓ **DAFF NON-PROBABILITY SAMPLE**

- **Efforts have been made to improve the response rate of the mail survey.**
- **Farmers who do not respond in time are contacted telephonically to obtain the information needed.**

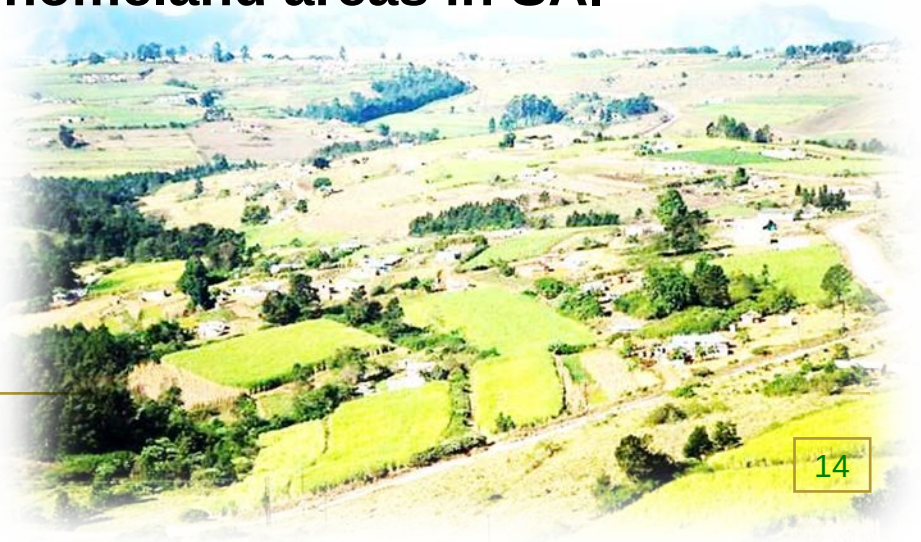
- **DAFF has also set up a list of all the farmers that would rather respond via e-mail and these farmers have been contacted with the preferred medium.**
- **The recruitment of new respondents is also continuously undertaken. (Grain SA)**

E. NEW IDEAS TO IMPROVE THE ACCURACY OF CROP ESTIMATES?

✓ **SUBSISTENCE AGRICULTURAL SECTOR**

- **Currently, data is received at the beginning of the production season from the PDAs.**
- **Lack of reliable and accurate data.**
- **This information is critical for Food security management and intervention decisions.**
- **DAFF has requested the Consortium to further develop the existing crop estimates in order to estimate areas planted for summer field crops in the former homeland areas in SA.**

(***North West during March 2015 and Limpopo during April 2016***).



E. NEW IDEAS TO IMPROVE THE ACCURACY OF CROP ESTIMATES? …

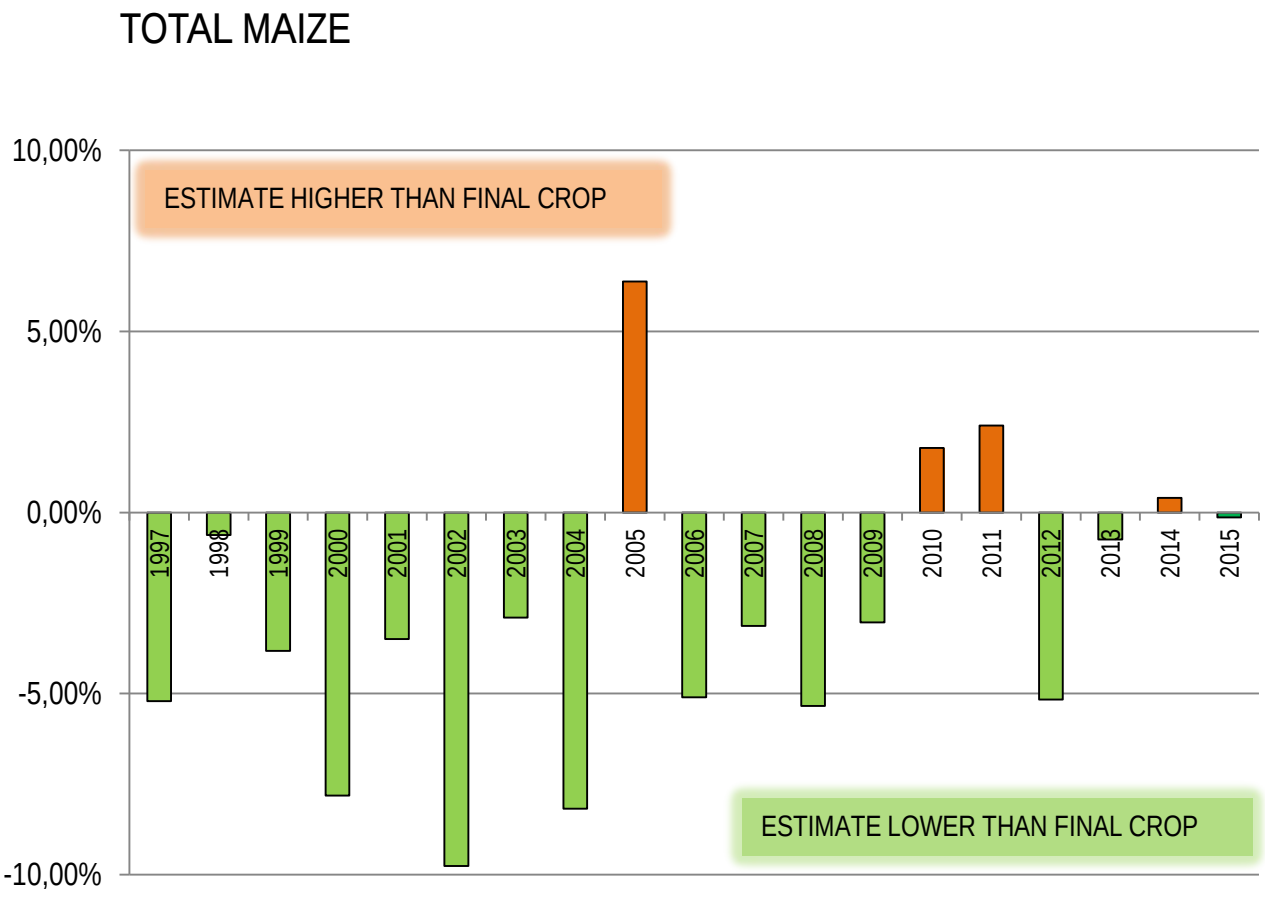
✓ **EARLIER YIELD INDICATION**

- **The CEC needs an earlier indication of the yields via a combination of satellite vegetation indices, specific crop models and agro-climatic data.**

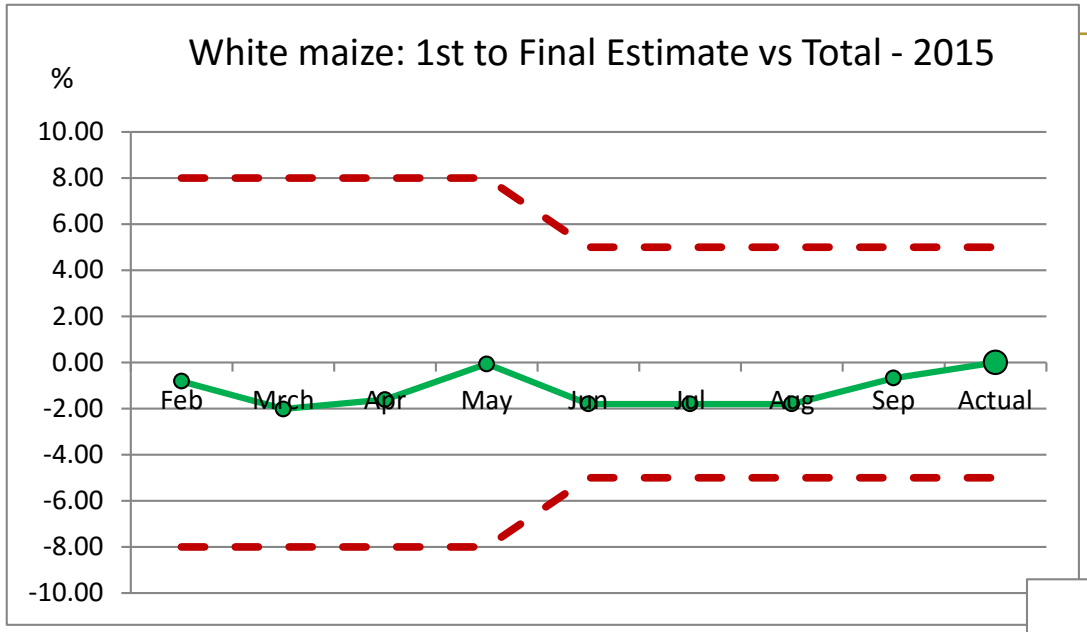
✓ **COLLECTION OF DATA FROM FARMERS**

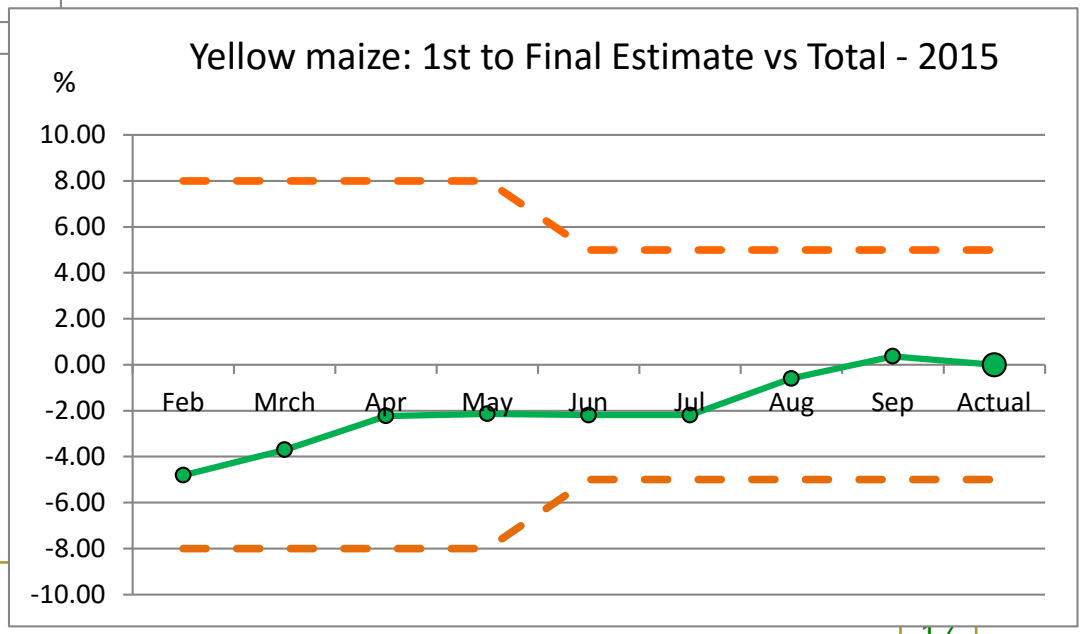
- **DAFF is currently investigating the possibility to collect data from producers through a cell phone application instead of using the traditional form of mailing the questionnaires.**
- **This will also allow to obtain additional information on farmers' crop and harvesting processes within the space of a few days.**

F. ARE CROP ESTIMATES ACCURATE AND RELIABLE?



F. ARE CROP ESTIMATES ACCURATE AND RELIABLE? ...





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Thank You

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A-LINE INPUTS

	AREA	YIELD	PRODUCTION
A-line	NCSC:PICES (obj) & Telephonic survey (subj)	NCSC: Obj field surveys & Telephonic survey	SAGIS (end of season)

Arial Survey: A new earth observation methodology, designed to objectively and accurately determine the area under summer and winter grain crops has been developed in South Africa.

A micro-light aircraft is used to survey selected points throughout the country. The aircraft is equipped with a sophisticated Global Positioning System (GPS) that allows for the easy capturing of field crop data.

Telephonic Survey: Estimates of planted area and area expected to be harvested are derived using data collected via telephone from a sample (probability sample) of farmers shortly after planting has been completed. Farmers have to indicate the area planted for each crop on his/her farm.

A-LINE INPUTS ….

	AREA	YIELD	PRODUCTION
A-line	NCSC:PICES (obj) & Telephonic survey (subj)	NCSC: Obj field surveys & Telephonic survey	SAGIS (end of season)

Telephonic Survey: Estimates of expected yields are derived using data collected via telephone from a sample (probability sample) of farmers during February and March (summer crops) and during August and September (winter crops). Farmers have to indicate the expected yield for each crop on his/her farm.

Objective Yield Surveys: Samples of fields are selected from the fields identified as having the crops of interest during the planted area surveys. In the case of maize, five (5) and for wheat three (3) small plots are randomly located in the selected fields, and counts and measurements of various physiological characteristics are made on the plants in each plot. Done once/season in main provinces.

SAGIS: Reports on actual producer deliveries.

SAGIS South African Grain Information Services NPC
Suid-Afrikaanse Graaninligtingsdiens NWM

B-LINE INPUTS

	AREA	YIELD	PRODUCTION
B-line	DAFF	ARC-Modelling (needs refinement)	SANSOR (discussions needed)

Postal Survey: Currently, the Crop Estimate Committee relies heavily on the subjective opinion of producers.

Data on the area planted, as well as a farmers' opinion on his expected production is collected from a non-probability sample survey (postal and e-mail survey) to estimate the average yields of summer and winter crops.

Considering current crop and weather conditions, each farmer in the sample reports the "expected production" for each crop on his/her farm.

Yield is a function of the expected production / area planted!!

B-LINE INPUTS

	AREA	YIELD	PRODUCTION
B-line	DAFF	ARC-Modelling	SANSOR (discussions needed)

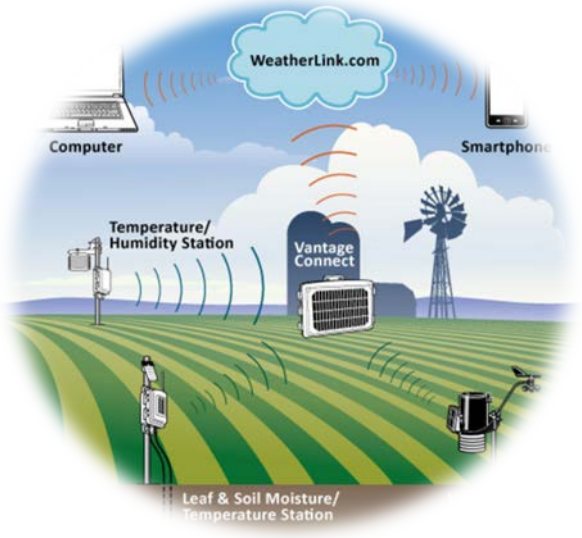
Inter-decision Support System – Growth Simulation Model:

Done by ARC Institute for Grain Crops

Various factors such as:

- available soil moisture for planting
- rainfall
- cultivars planted
- other production inputs

to determine the possible yield (tons/ha)



C-LINE INPUTS

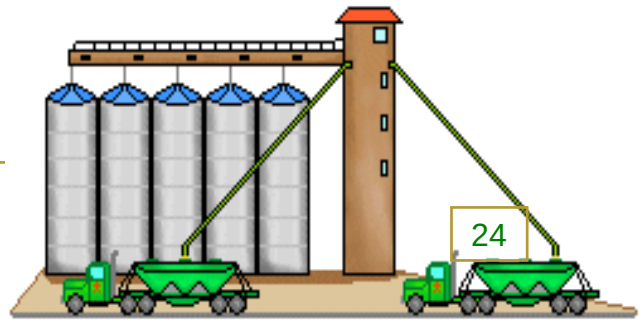
	AREA			YIELD			PRODUCTION		
C-line	Risk-specialists	DPO	Fertiliser Comp's	Financial Institut's	Forums	Agric Businesses	PDAs	SACOTA	Traders/ Reports

PDAs assess local conditions and have direct consultations with farmers and farmers study groups.

Own observations regarding weather conditions, crop conditions (phonological stages), crop pests and diseases are also made.

They have a network of contacts from which information is obtained on areas planted and yields. This network may include agric businesses, seed companies, producers' organisations and large-scale farmers.

Agric businesses: A questionnaire is sent monthly to the various companies to update with latest area planted and production statistics.



4. EVALUATE RESULTS

After the production season has been completed, the size of the crop should be finalised at the CELC meeting.

Summer crops: February AND Winter crops: May

FINALISATION CAN BE SUMMARISED AS FOLLOWS:				
TOTAL CROP	=	DELIVERIES	+	RETENTIONS ON FARM for OWN USE
		(SAGIS)		(SURVEYS BY DAFF & NCSC)

If the target is not within 5% of the finalised crop, CELC is to give guidance in trying to improve the crop estimates process.