

Overview of YIIFSWA II Database

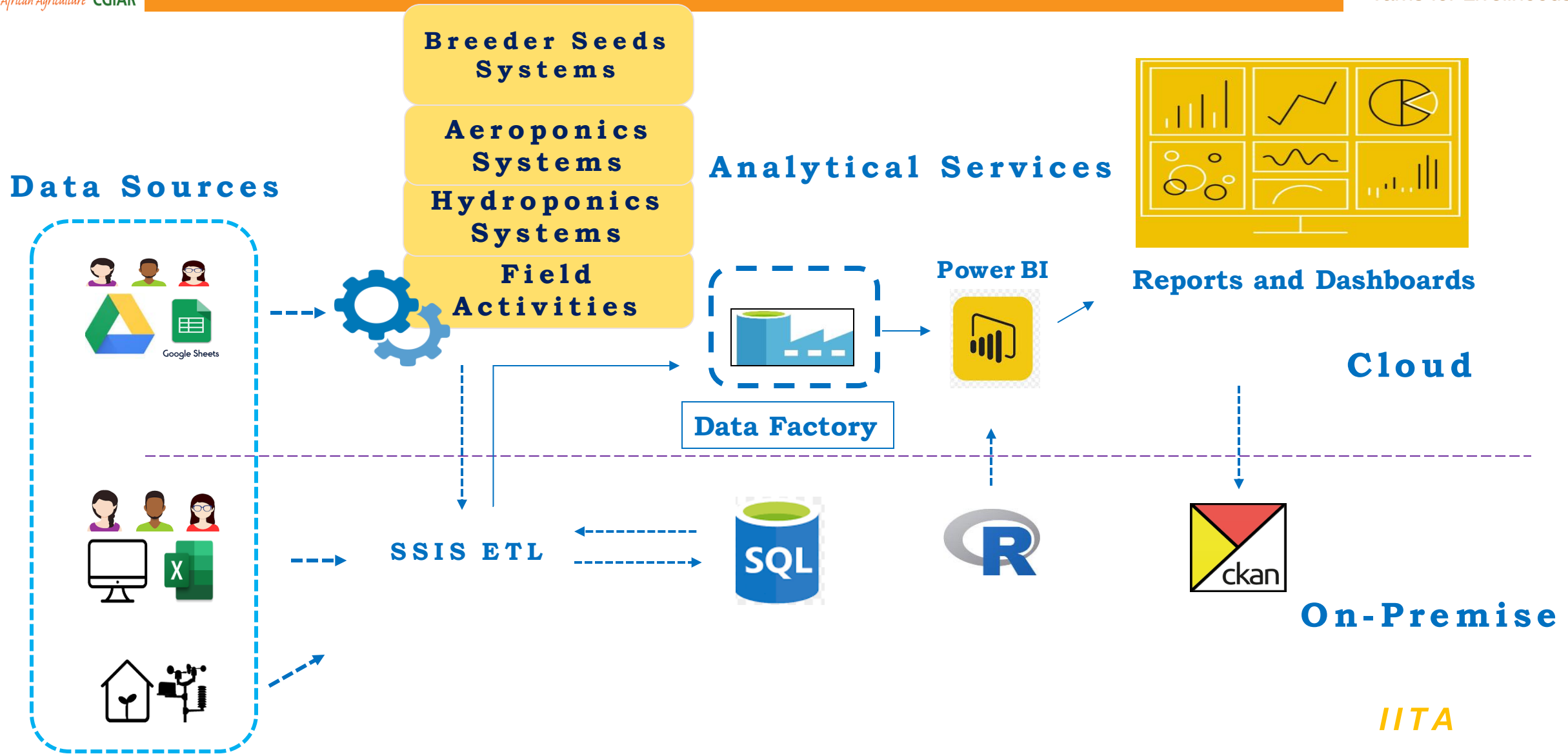
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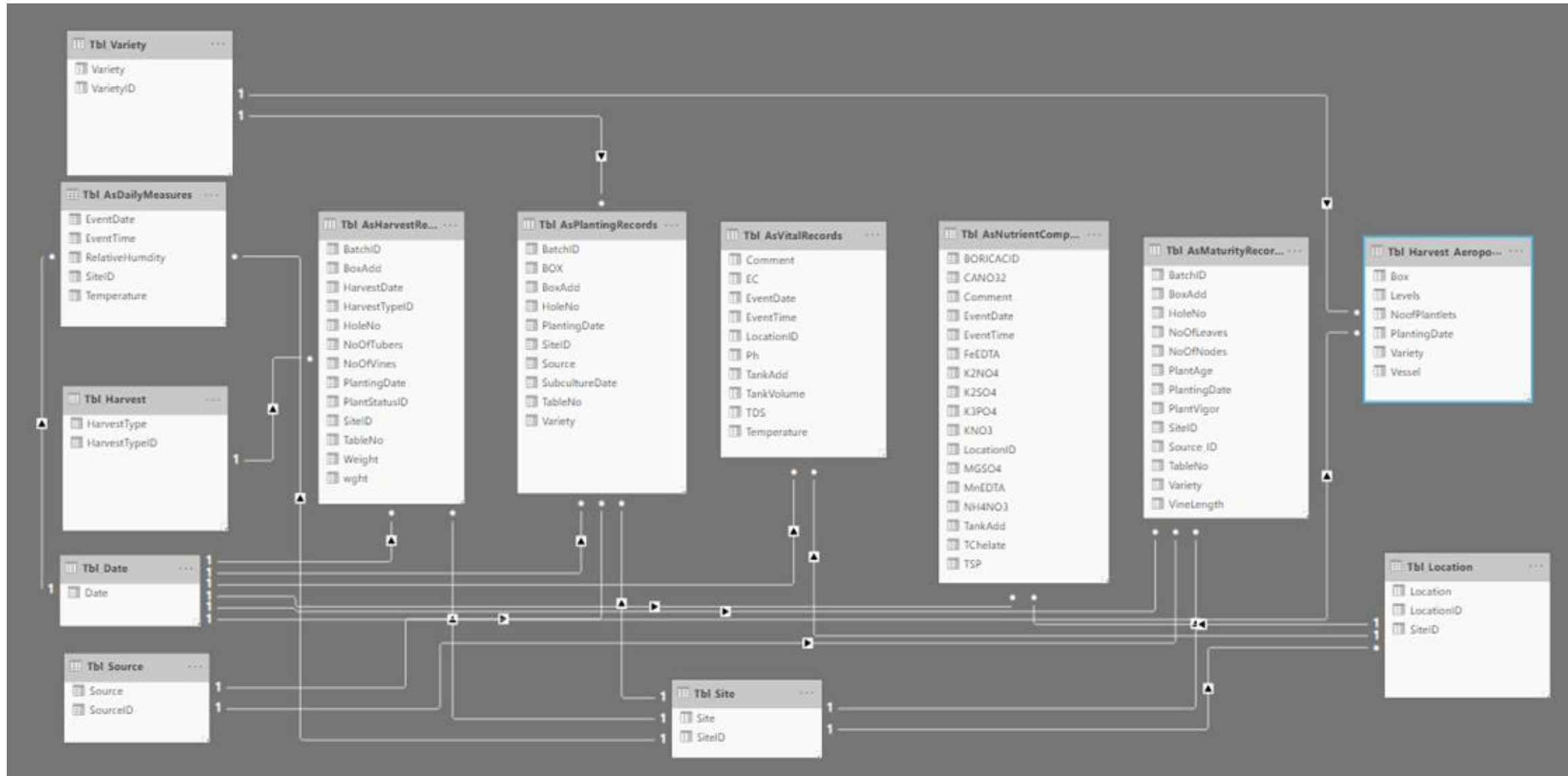
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YIIFSWA-II Database Analyst

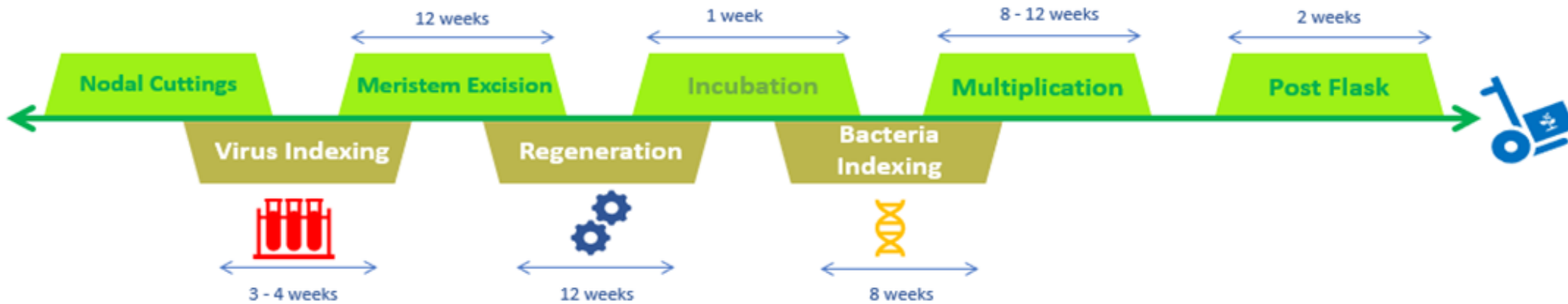
- **YIIFSWA-II Data Architecture**
- **Breeder Seed Production System**
- **Aeroponics & Hydroponics Systems**
- **NARIS Breeder Seeds Documentation**
- **Activities Dashboard**

YIIFSWA-II Data Architecture





.: Tissue Culture Process Flow



.: **Key Processes** : Media Preparation, Multiplication (Subculturing).

.: **Measures** : Volume of Media Prepared*, No. of Plantlets Produced*

.: **Line Efficiency** : OEE (Overall Equipment Effectiveness) is the gold standard for measuring manufacturing productivity.

Breeder Seed Production System

Highlights of the 2019 Production

In CTCs there was a plantlets (Inputs) of **3,582** to generate **10,729** plantlets

The ratio of number plantlets (Inputs) to number of Plantlets produced in Temporary Immersion Bioreactor system (TIBs) is **1:3**.

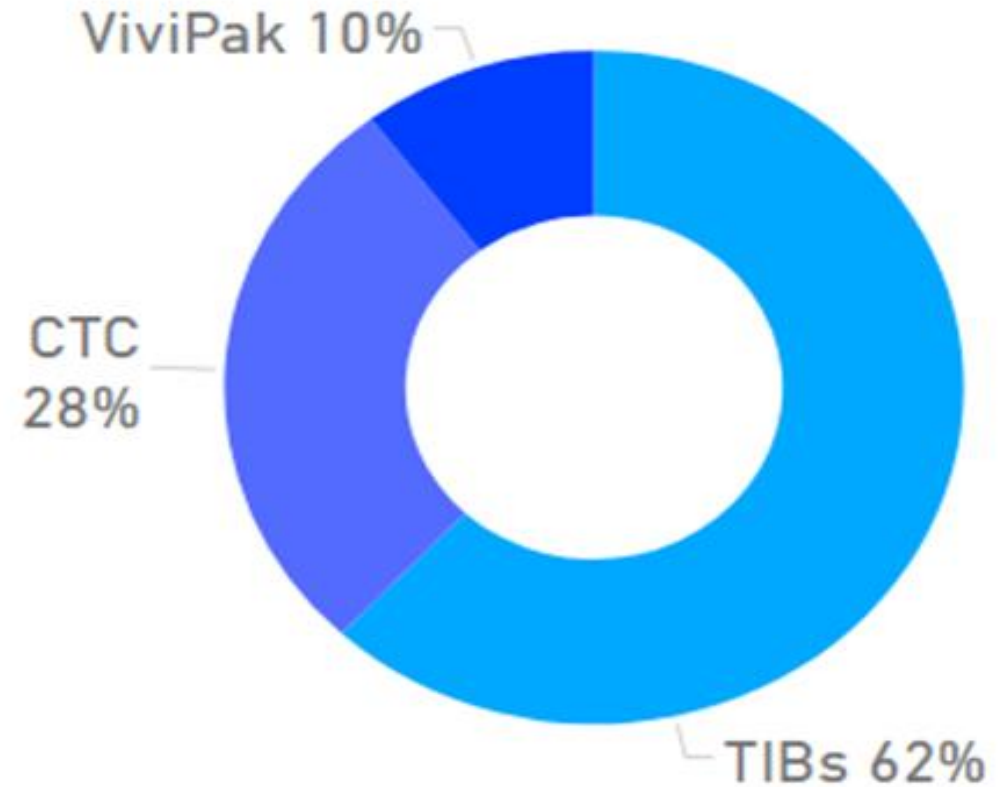
The highest plantlets multiplication was in the Plantform TIBs 3,994 plantlets were produced in Vivipak as a result of late product delivery

Stock Keeping Units(SKU)

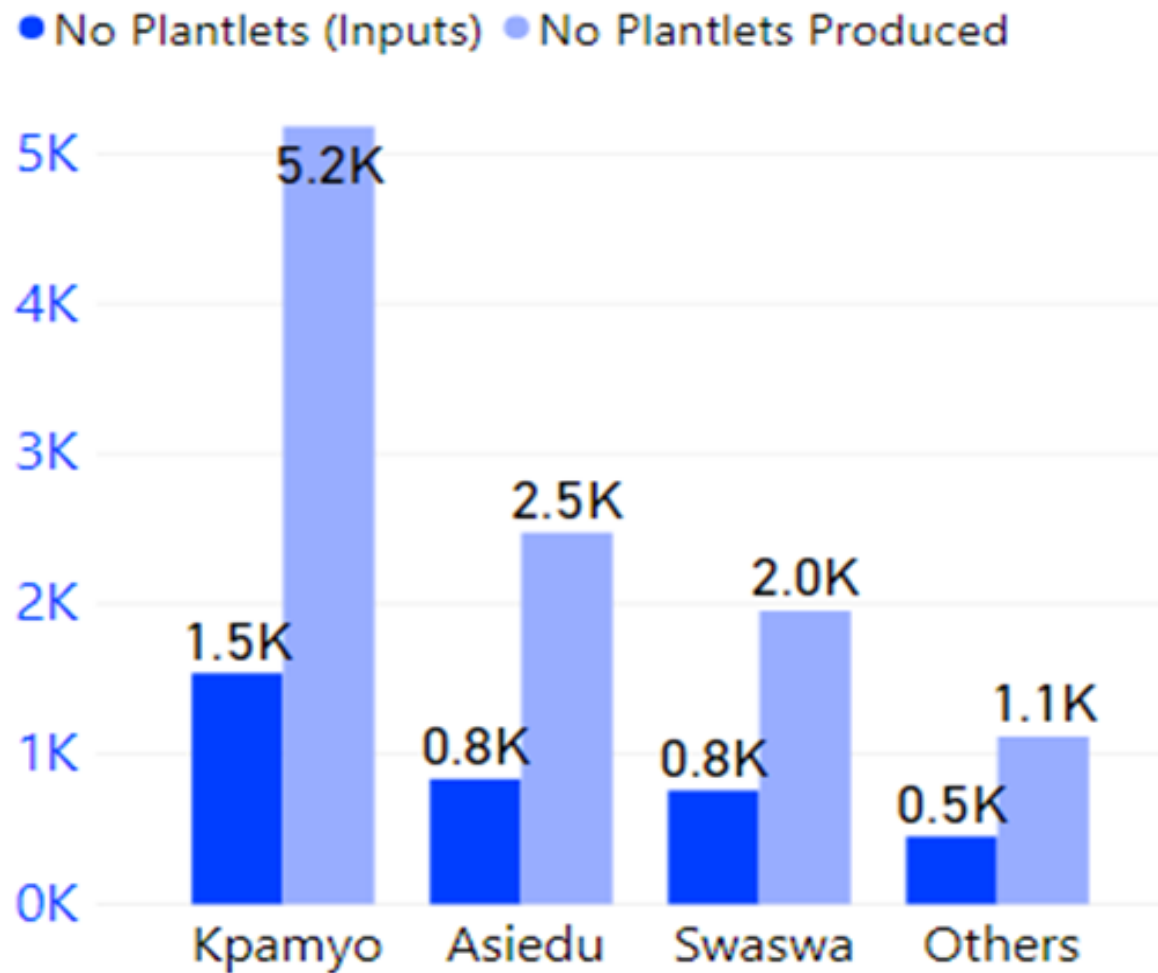
1. Vivipak
2. Test Tubes (CTCs)
3. Plastics (CTCs)
4. Setis (TIBs)
5. Plantform (TIBs)

Production (Subculture) by SKU

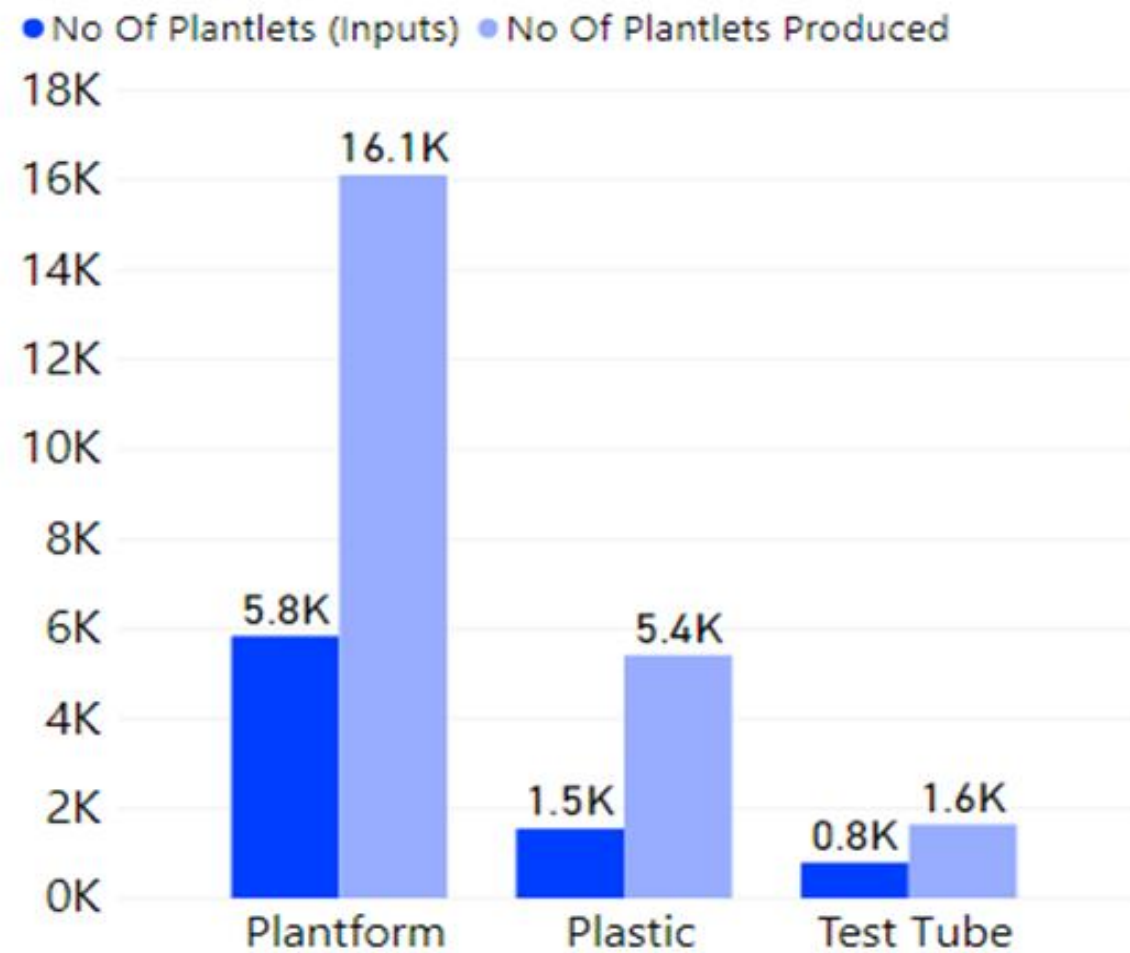
SKU ● TIBs ● CTC ● ViviPak



Production of Convention Tissue Culture by Genotype



Production in Temporary Immersion Bioreactor System by SKU (Inputs)



Plantlets Stock Usage

Materials generated in Plantform reached 17,770 which is about 60% of the usage

Minimum monthly production of 690 plantlets and Maximum was reached 2135 plantlets

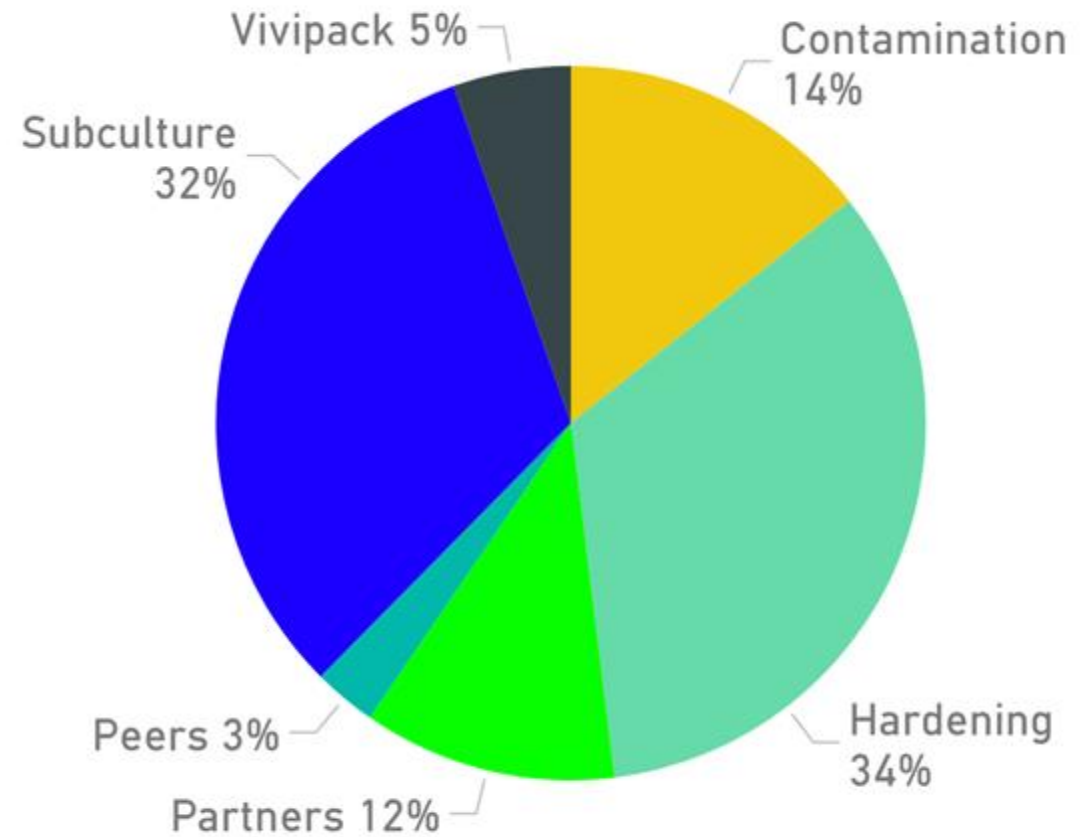
Month	Plantform	Plastic	Test Tube	Total
January	1735	758	91	2584
February	1300	971	87	2358
March	1450	860	123	2433
April	690	452	16	1158
May	1790	354	552	2696
June	1642	831	366	2839
July	1847	693	608	3148
August	2135	429	260	2824
September	917	1105	354	2376
October	1544	563	757	2864
November	1777	924	141	2842
December	943	324	85	1352
Total	17770	8264	3440	29474

Stock Usage of Plantform Plantlets

Below are proportion and usage of the plantlets collected from Plantform

Usage (Removals)

- Contamination
- Hardening
- Partners
- Peers
- Subculture
- Vivipack



	Jan - Apr	May - Aug	Sep - Dec	Total
Total Cost (USD)	7921	7994	7914	23828
Derived Cost (New Price in USD)	0.67	0.65	0.74	0.68

Based on the output of 2018 cost estimation designed with Context

Note: Bench Fee at IITA increased by 25% in 2019.

Plantlets Production Cost => Cost of plantlets (input) + Media Cost by Volume of Product + Equipment & Machine Cost + Human Resource Cost

	Unit Cost (\$) in 2018
CTCs	0.87
TIBs	0.61
Culture Media	1.05
Bench Fee	750

Aeroponics & Hydroponics Systems

Plantlets establishment

The Aeroponics facility at the BIP location of the campus in Ibadan was established for 2 streams cycles.

Total **3,300** plantlets introduced of Kpamyo and Asiedu.

Growth Comparison:

Sources : SAH, TIBS and Regenerate TIBS materials (Aeroponics Rooted Vines)

Harvest of Vines and Mini Tubers

Nursery Experiment

Screen House Management

SAH: Semi Autotrophic Hydroponics

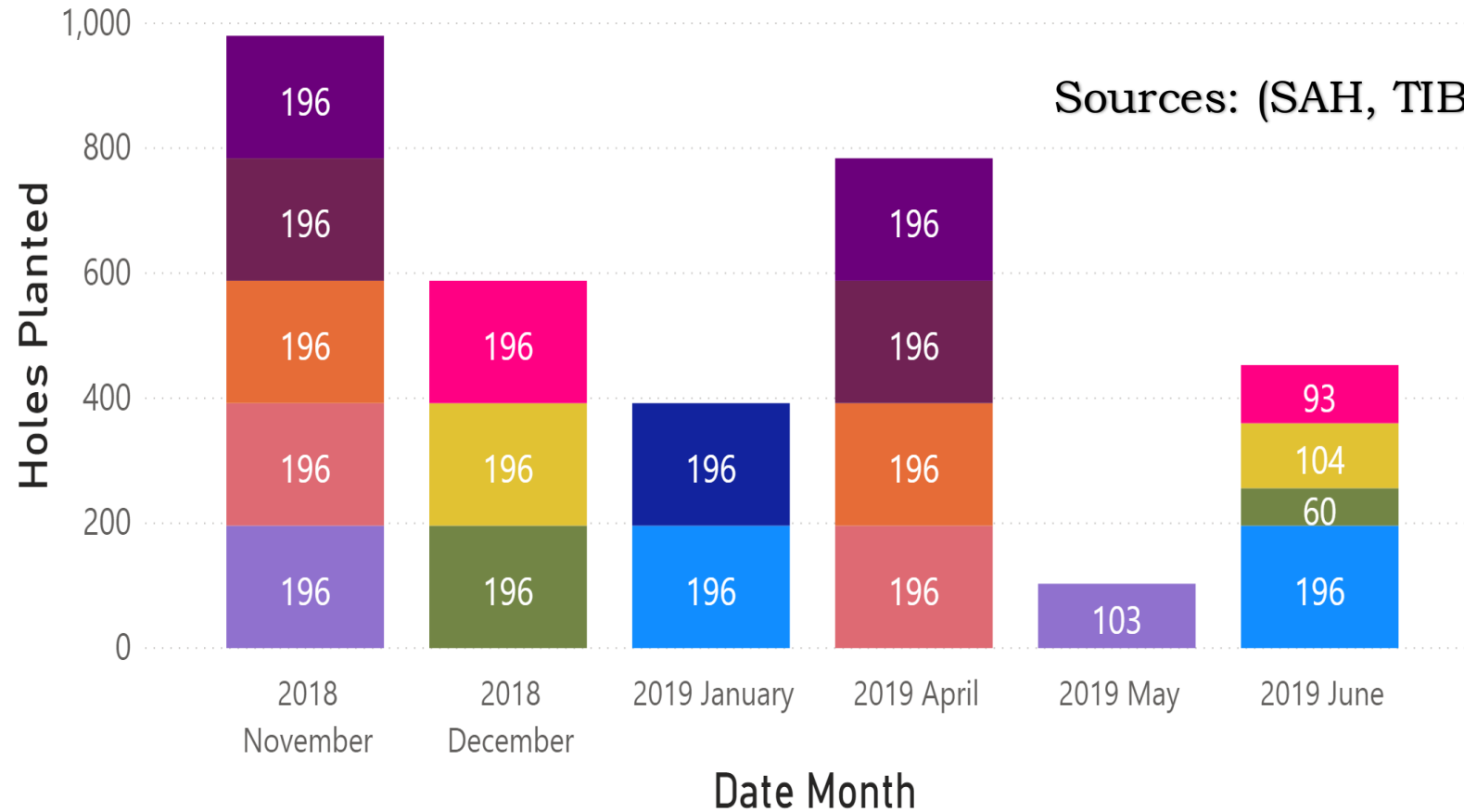
TIBS: Temporary Immersion Bioreactor

Plant Establishment in Aeroponics

Holes Planted by Year, Month and Boxes

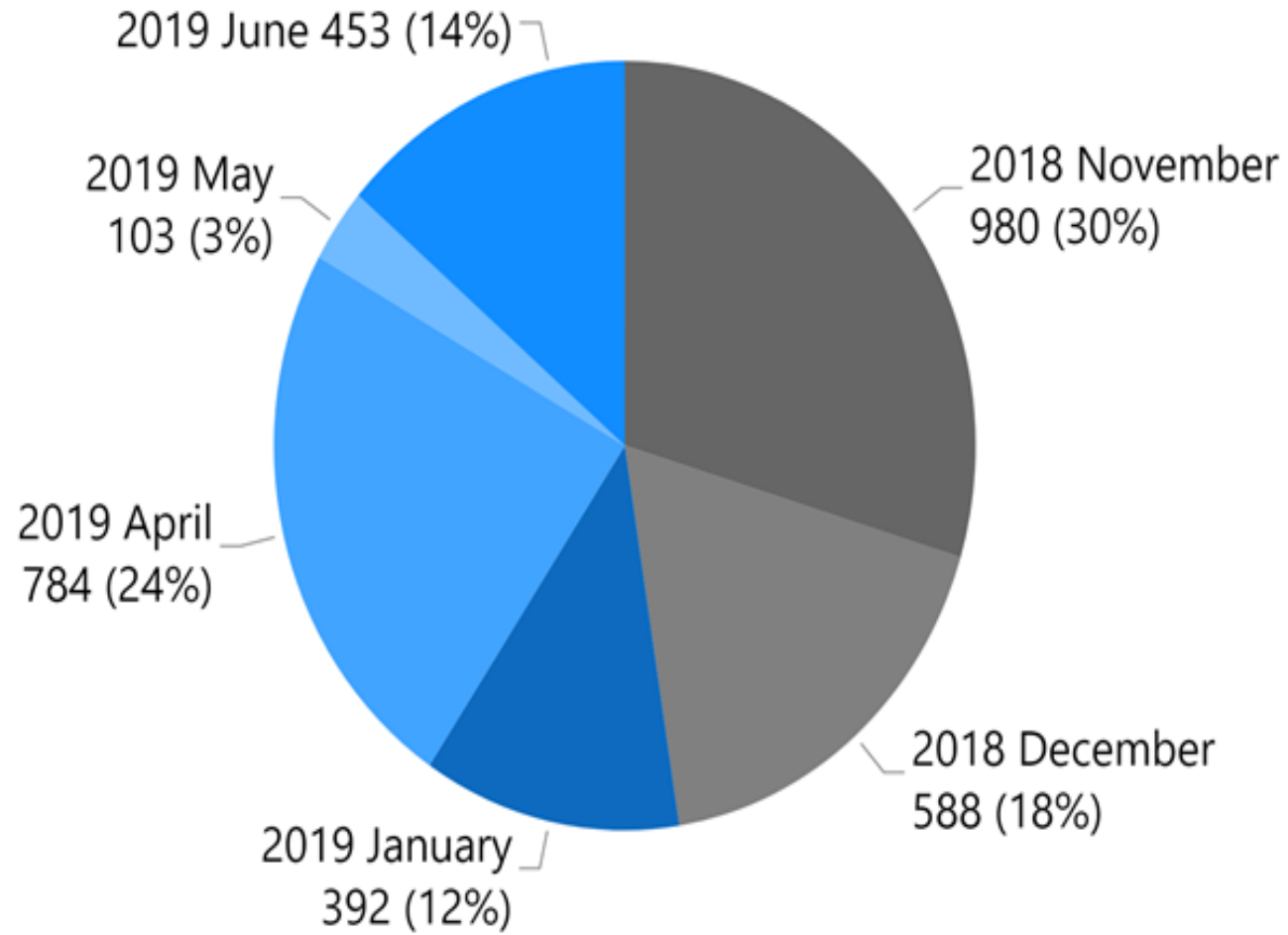
Total 3300 plantlets introduced
Kpamyo and Asiedu

Boxes ● A ● B ● C ● D ● E ● F ● G ● H ● I ● J



Sources: (SAH, TIBs and Regenerate TIBs Materials
Aeroponics rooted)

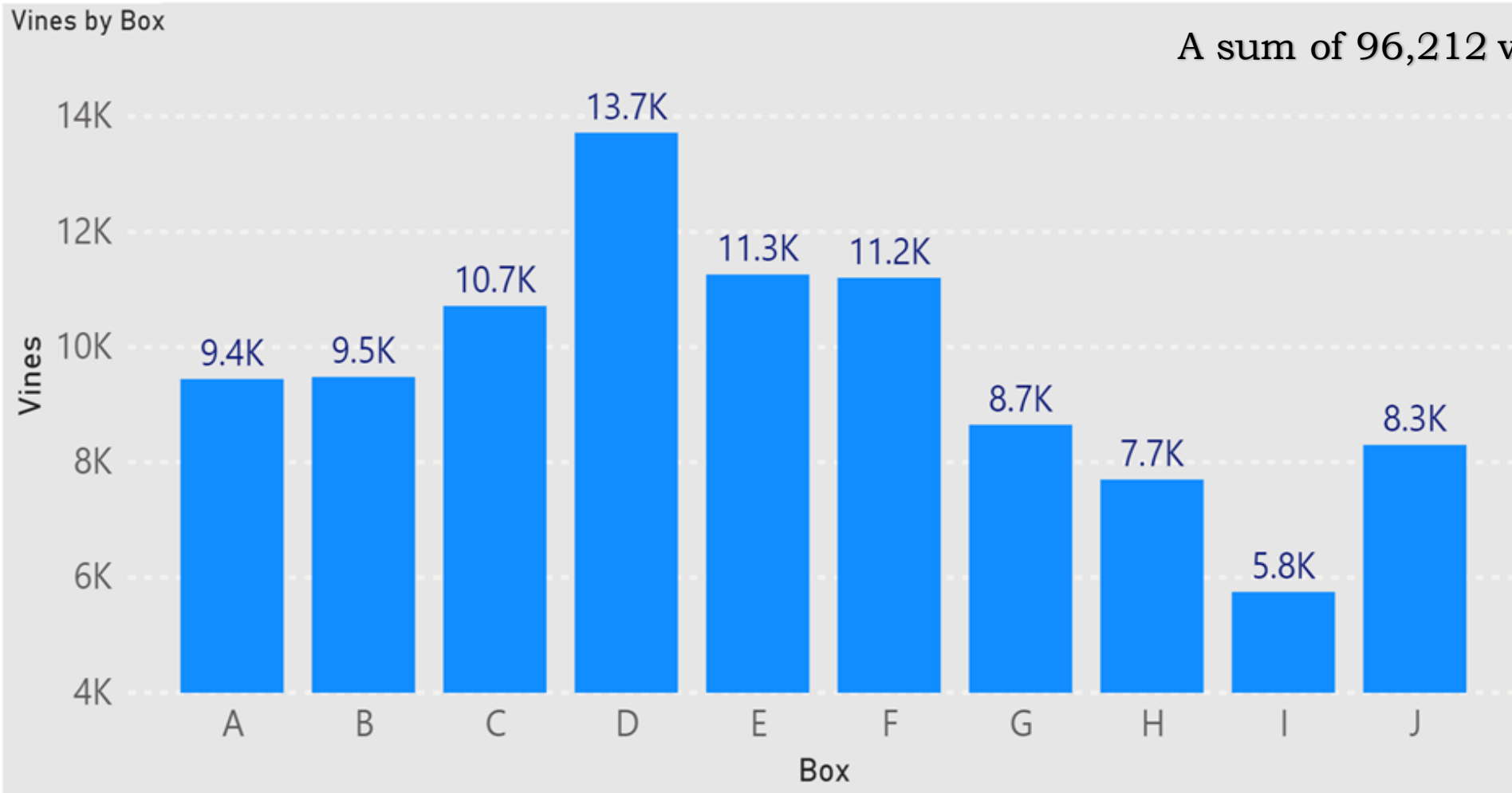
Holes Planted by Year and Month



Date Month

- 2018 November
- 2018 December
- 2019 January
- 2019 April
- 2019 May
- 2019 June

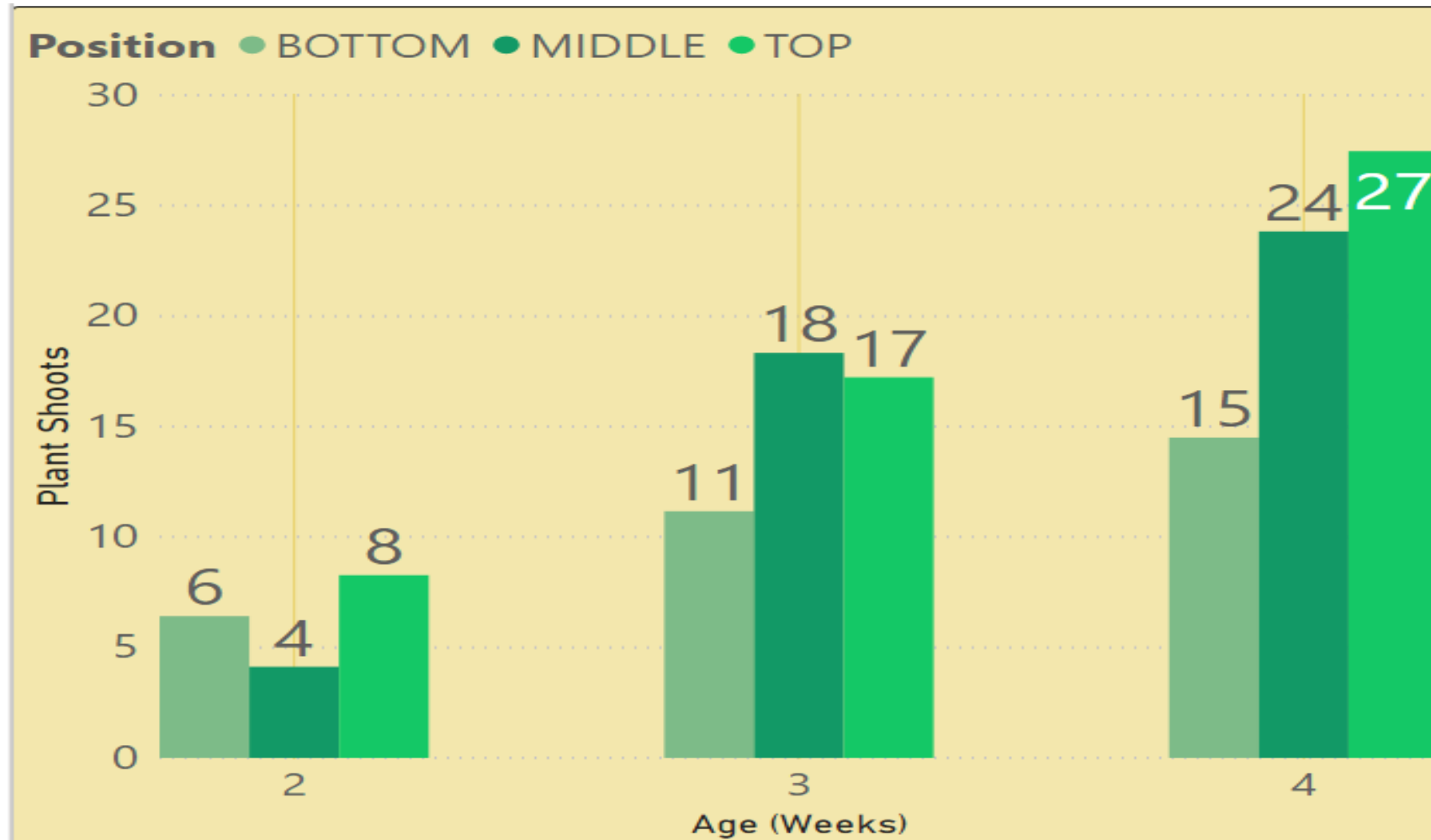
Vines Production from the Aeroponics



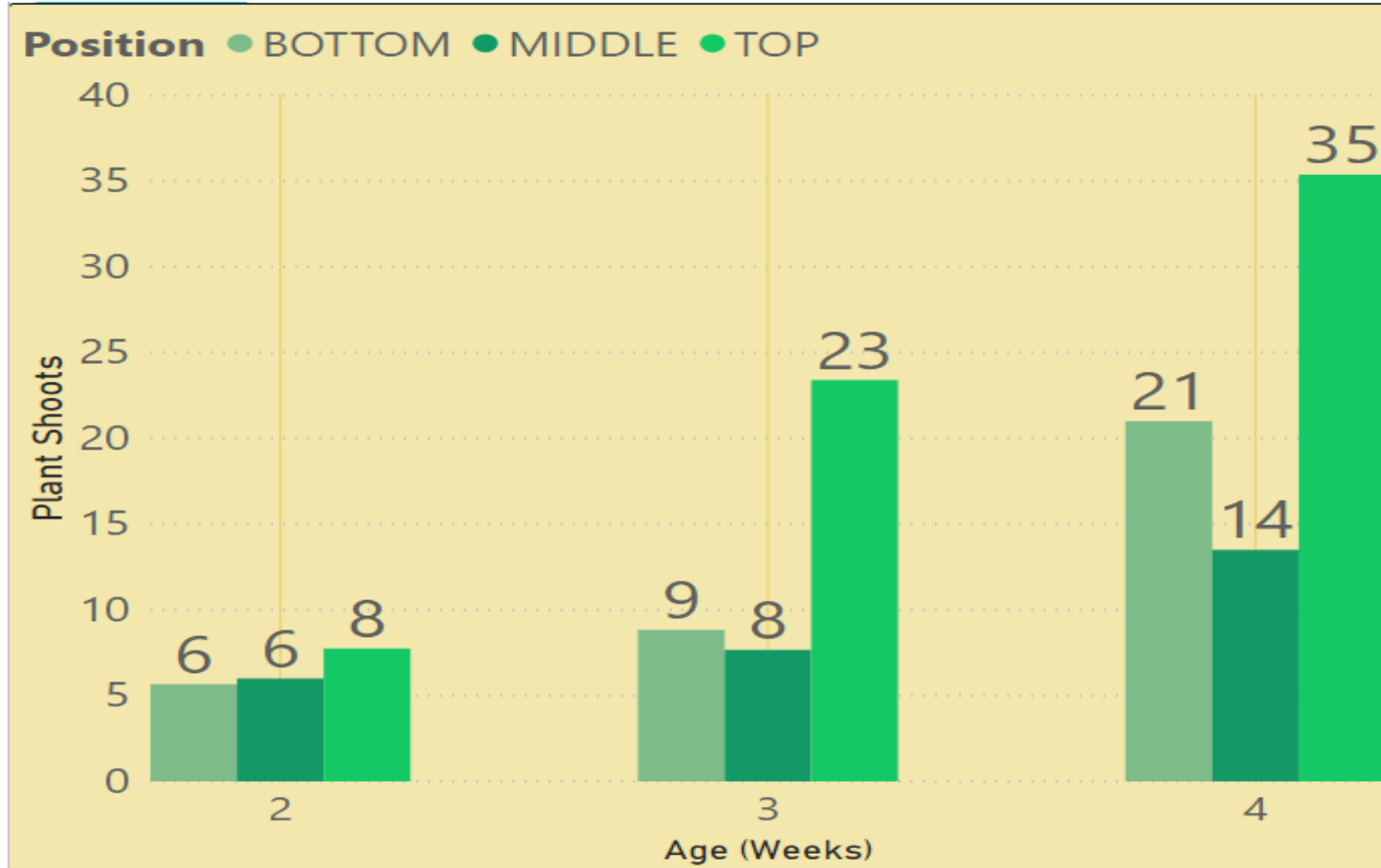
A sum of 96,212 vines were generated

April : 46,407
May : 39,355
October : 5950
November : 4300

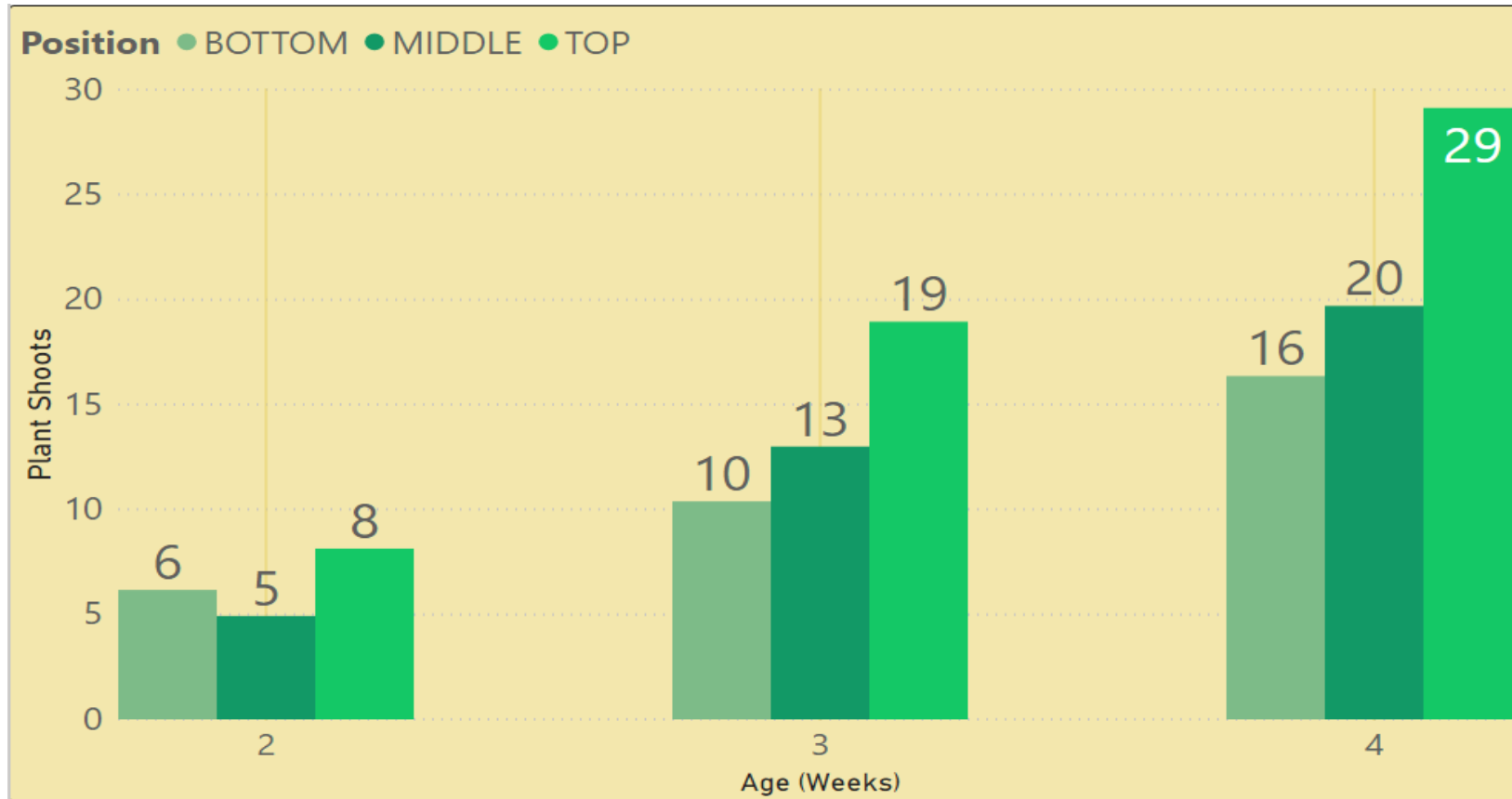
Kpamyo AS seedlings growth by Stem position



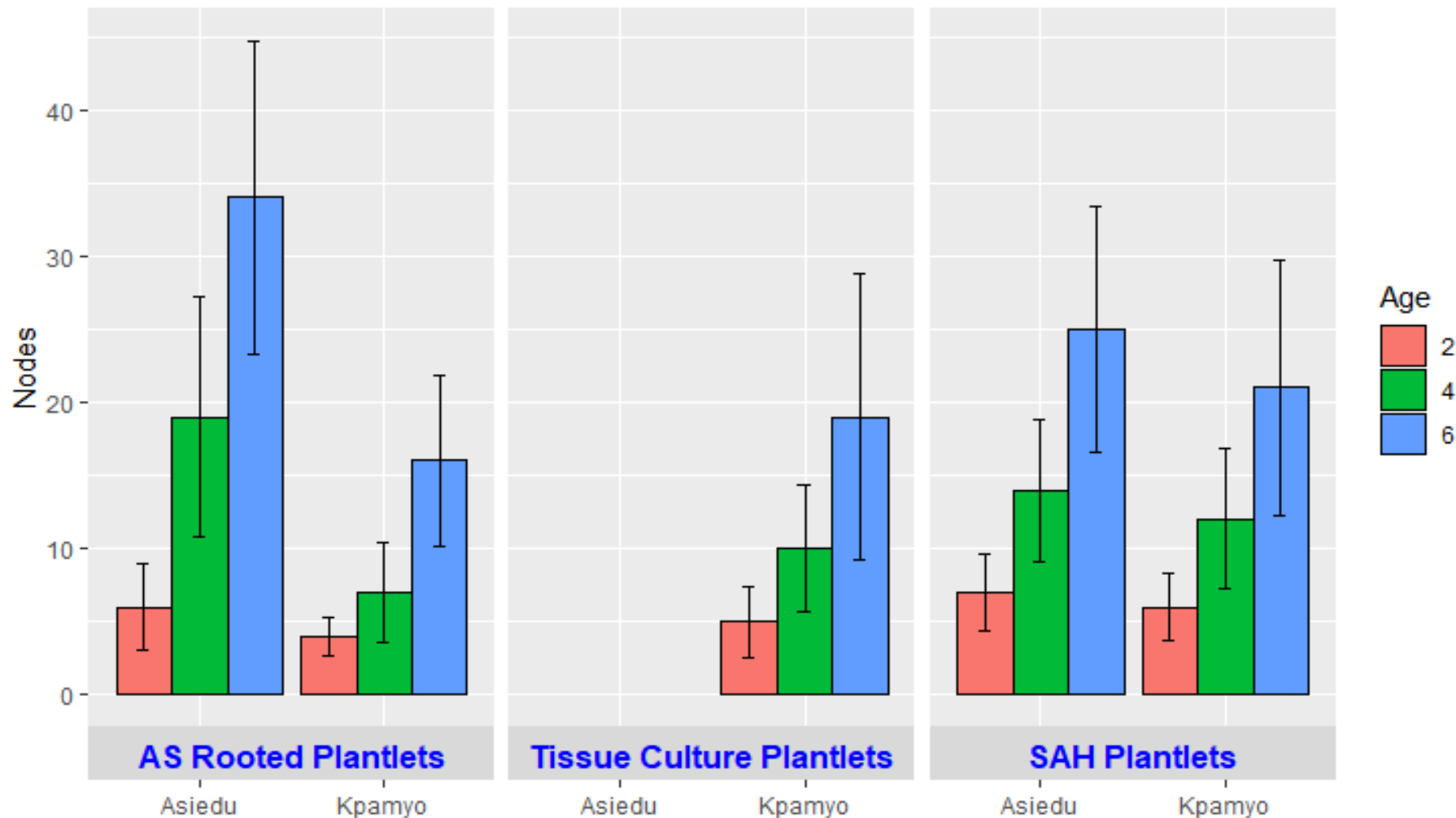
Asiedu AS seedlings growth by Stem position



Average Seedlings Growth by Stem Position



Growth Comparison of Two Genotypes established in the Aeroponics



Asiedu & Kpamyo of different sources

*These observations were only taken for 6 weeks and the were collected at 2 weeks interval

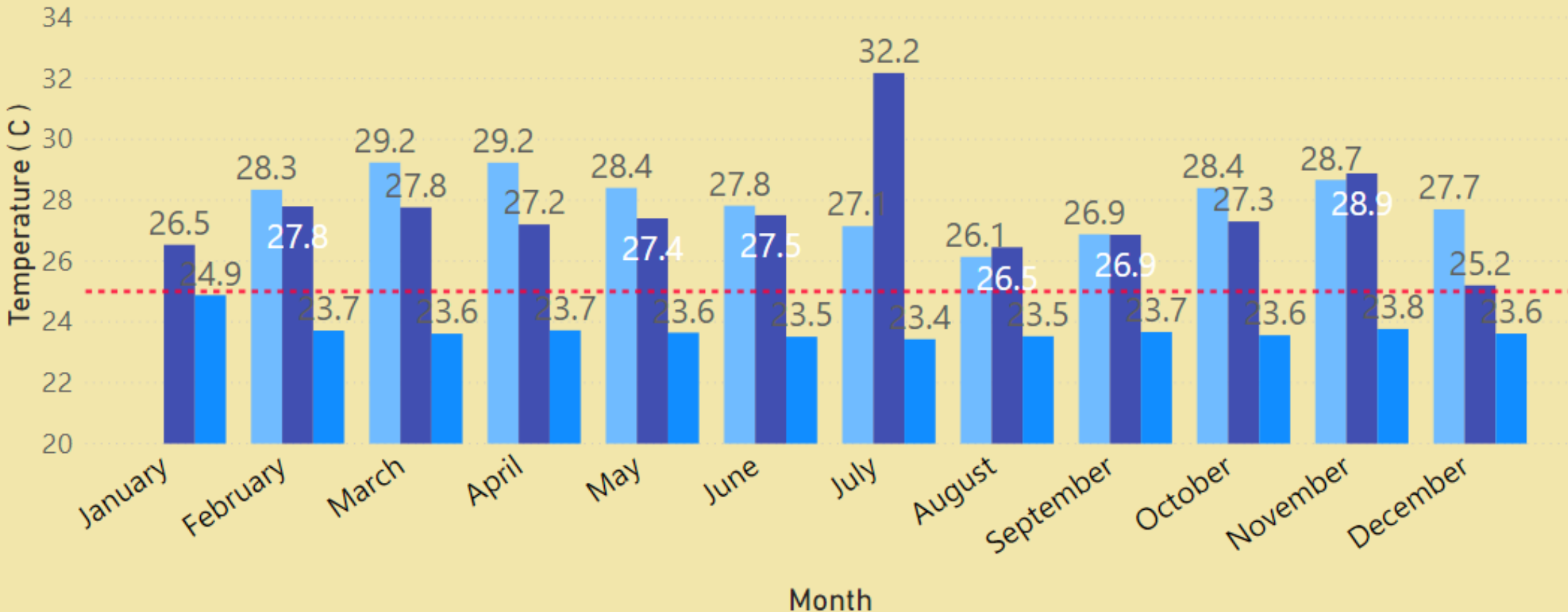
Harvest of Mini Tubers from the Aeroponics

Month	No. Of Plantlets	No. Of Tubers	Weight (g)
April	698	776	8452
May	656	657	7164
October	854	854	33067
December	247	247	9760
Total	2455	2534	58443

The effects of the Chiller on the temperature Nutrient solution

Average Temperature (C) by Month

Years ● 2017 ● 2018 ● 2019



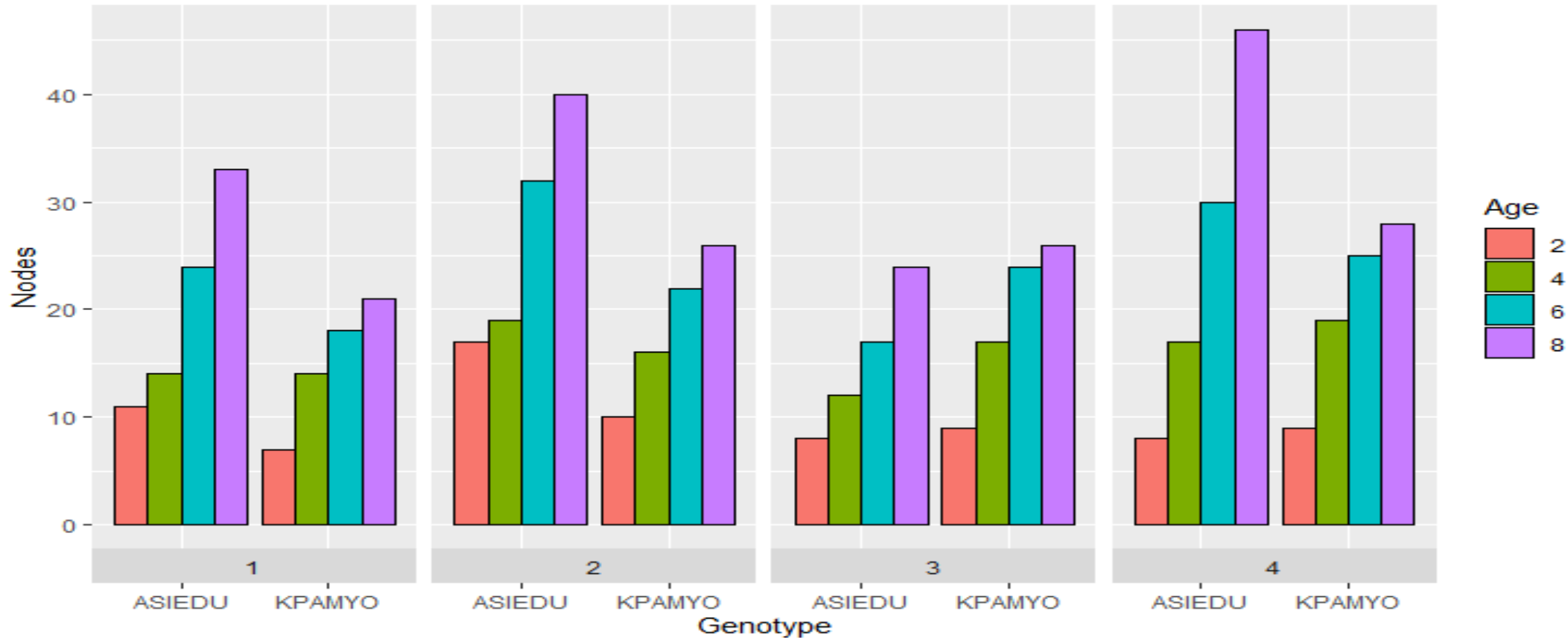
The chiller stabilized the nutrient temperature between 23°C - 25°C

Harvest of Tubers and Single Node Vines Production by Genotypes

Hydroponics system	Genotype(s)	No of Plantlet(s)	No of Tuber (s)	Tuber weight(g)
Deep Water	Asiedu	36	67	1500
Drip System	Asiedu	121	312	8594
Drip System	Kpamyo	258	511	12669
Total		415	890	22762

Genotype(s)	No. of Vines
Asiedu	6647
Kpamyo	1356
Total	8003

Growth comparison in Plants Nodes different substrate over 8 weeks
(observations taken at 2 weeks interval)



Key: Substrate - 1 - Cocopeat + Perlite, 2 - Cocopeat + Perlite+Large Pumice, 3 - Cocopeat + Perlite+ Medium Pumice, 4 - Cocopeat + Perlite+Small Pumice

Weather Station

Source : Edit

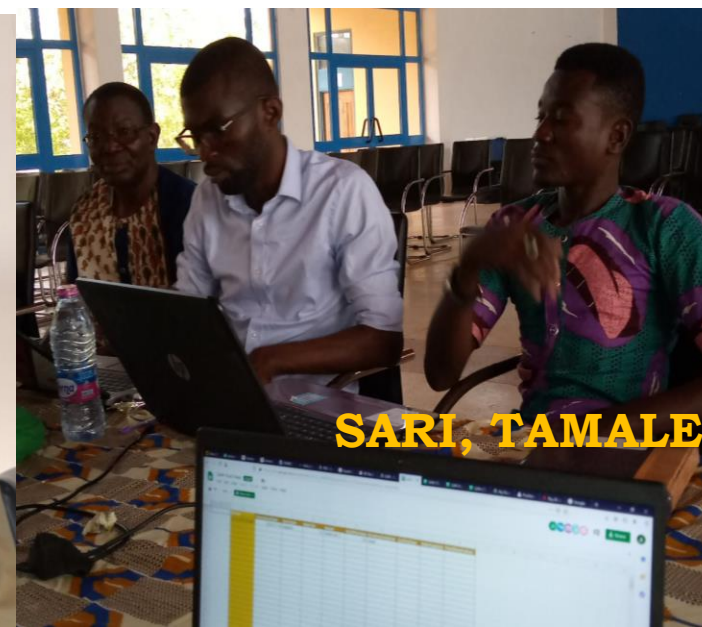
NARIS Breeder Seeds Documentation



NRCRI, UMUDIKE



CRI, KUMASI

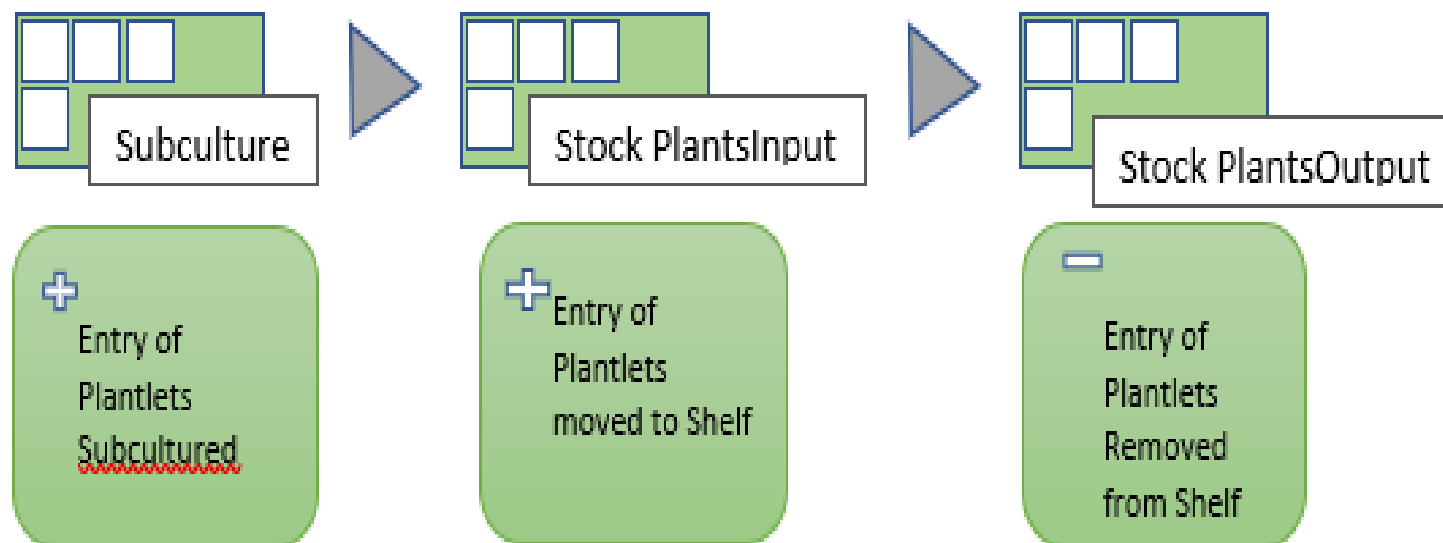


SARI, TAMALE

Documentation For NARIS in the Breeder Seed production

- Stock Keeping
- Batch Processing
- Labeling adequately
- Reporting

Conventional Tissue Culture



Online Production Sheet (Weekly)

The sheet auto - populates as the partners subculture spreadsheet is filled. And it sums up the production.

							Genotype		
s/n	Weeks(By Year)	Month	Weeks(ByMonth)	FirstWeekDay	LastWeekDay	Population Produced	Kpamyo	Asiedu	Swaswa
36	36	Sep	1	2019-09-02	2019-09-06	0	0	0	0
37	37	Sep	2	2019-09-09	2019-09-13	0	0	0	0
38	38	Sep	3	2019-09-16	2019-09-20	0	0	0	0

Documentation Resources Developed for the NARES

CRI, Kumasi, GHANA

<https://drive.google.com/drive/folders/1F1fehqRpKNsGJBkZAqrHr794bgDD5mqo?usp=sharing>

SARI, Tamale, GHANA

<https://drive.google.com/drive/folders/1xBJPdTVKjm3BZvtv60EZynwd9dNsEdJu?usp=sharing>

NRCRI- Umudike, NIGERIA

https://drive.google.com/drive/folders/1Ld_4GKAdytrUx5OVCnOr_3A2_CVUg2g6?usp=sharing

NACGRAB, Ibadan, NIGERIA

(To be done this year)

Reportables Link
Database
Go to this Sway

BMGF

YIIFSWA – II Team members and Partners

THANK YOU FOR YOUR ATTENTION