### REPORT OF THE FARMERS' FIELD DAYS HELD AT NKARINI MIXED DAY SECONDARY SCHOOL AND ON-FARM TRIALS IN THARAKA SOUTH SUB-COUNTY, THARAKA-NITHI COUNTY ON 12<sup>TH</sup>, JANUARY, 2021

### Project Title: Climate smart options allowing agricultural intensification for smallholders in the dry zones of the Central Highlands of Kenya



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# Acronyms and Abbreviation

- KSCAP Kenya Climate Smart Agricultural Program
- MBILI Managing Beneficial Interactions in Legume Intercrops
- MoA Ministry of Agriculture

#### **Summary**

The field day was held on the 12<sup>th</sup> January, 2021. It was organised for the second time in the project life. Soil fertility and soil and water conservation technologies testing on-station was on the fourth cropping season of the project life while the on-farms were on the first cropping season. The objective of the on-station trial was to identify the best performing technology for popularisation aside from demonstration to the farmers the performance of different technologies. The on-farms on the other hand was to help popularize the technologies among the farming community aside from testing the performance of the selected best bet technologies in the farmers' farming conditions. The objective of the field day was to exhibit the various technologies to the farmers and to give them opportunity to evaluate their performance. About 250 attended the field days including the farmers and the various stakeholders. There was consistency in the evaluation results of on-station and on-farms trials by farmers. The technologies that had high and moderate rate of manure and fertilizer application were ranked as the best performing both on-station and on-farm as per the farmers' evaluation. The best bet technologies thus need to be popularized further by conducting more seasons on-farms and creating awareness among the farmers to enhance the technology uptake and eventual adoption. This will help in achieving the envisioned project agenda stipulated in its theory of change that targets improve rural livelihood through enhancing agricultural productivity.

#### REPORT OF FARMERS' FIELD DAY HELD AT NKARINI MIXED DAY SECONDARY SCHOOL ON 12<sup>TH</sup> JANUARY 2021

#### **1.0 Introduction**

The field day was held on Tuesday the 12<sup>th</sup> of January, 2021. The on-station and 6 of the onfarms trials were used as technology exhibition and demonstration sites. The on-station site was at Nkarini Mixed Day Secondary School, while the on-farms used were within 2 km radius from the on-station. This allowed the ease of movement of the farmers from the onfarm to the on-station and vice-versa. Technologies implemented on-farms were the best performing that had been identified by the farmers in the previous evaluation during the first on-station farmers' field day. The objective was to showcase the performance of various soil fertility, soil and water conservation practices on sorghum productivity to the farmers for their evaluation. The on-station trial gave farmers the opportunity to identify and evaluate the best fit technology that had good performance and could suit their farming conditions. The onfarm stations gave farmers the opportunity to be able to evaluate the practicality of the implementation of the technologies in their own farms aside from evaluating their performance. This was an opportunity to help popularize the technologies to the farming community for adoption towards improving crop productivity in the region. The farmers were also to interact with various stakeholders in agriculture including the researches, extension officers, agro-dealers, financial institutions and the government authorities. This was to provide a platform to express some of their concerns in their agricultural endeavours to the relevant stakeholders in the quest to improve agricultural productivity. This is in line the project theory of change that targets improving rural livelihood through improving crop productivity and income among the farmers.

The field day was sponsored by VLIR-UOS project entitled "Climate smart options allowing agricultural intensification for smallholders in the dry zones of the Central Highlands of Kenya". The project is funded by the Flemish University (University of KU Leuven), Belgium and implemented by University of Embu in collaboration with Kenyatta University, University of Nairobi, Kenya Agricultural and Livestock Research Organization (KALRO) and the County Government of Tharaka-Nithi. The objective of the VLIR-UOS project is to train researchers and students, promote agricultural productivity through identification of the ideal technologies and improve livelihood in the drylands of the Central highlands of Kenya. The field day was part of the project objective (IR 5), which is to

popularize the best bet technology to the farming community for improved crop productivity and consequently enhanced livelihood.

The experimental trials investigate the integrated effect of various soil fertility, soil and water conservation practices on sorghum productivity in the region. Through the project, students are trained and the community empowered through promoting the identified best performing technologies for improved agricultural production. The field day was part of community development and improvement of rural livelihood as the farmers were given the opportunity to observe and assess the best performing practices in improving agricultural productivity. It was the second farmers field day held by the project.

The field day was held towards the end of the 4<sup>th</sup> cropping season, and the 3<sup>rd</sup> year of the project (Short rains 2020) life. It was the during the 15<sup>th</sup> week of the season. The sorghum was approaching physiological maturity, while green grams had attained physiological maturity and were due for harvesting. The short rains 2020 season was deemed a successful one due to sufficient rains received, and subsequently good crop attained. The effects of various technologies were visually apparent, making it ideal for farmers' field day. Farmers' could easily asses the best performance based on leaf colour, plant vigour, tillering number and the head size of the sorghum. However, green grams' performance of was not evaluated.

### 2.0 Attendance and Registration

Registration of farmers and stakeholders was done at the entrance of each station on arrival. They sanitized their hands and were given face masks at the entrance in trying to contain the spread of Covid 19 pandemic. Farmers registered once, such that those who registered on-farm did not register again on-station. Approximately 250 people were in attendance in total (Appendix 1). About 150 were the farmers and farmer groups, 20 officials and extension officers from the Ministry of Agriculture, Tharaka-Nithi County, 2 from KCAP, 6 from Solution SACCO Microfinance institution, 3 representatives from a water supply company and 20 from Kenyatta University and University of Embu (Scientists and students). The guest of honour was the Agriculture Director of Tharaka-Nithi County, Mr Nickolas Mokaya. Also in attendance was the school administration of Nkarini Mixed Day Secondary School led by Mr. Robert Njagi, the principal and his deputy Mrs. Irene Ndirangu, the teaching staff and 12 Agriculture students. The stakeholders were handed the programme of the day activities on

arrival (Appendix 2). Farmers were registered and organised into groups in readiness to visit the trials and other exhibition stands.



Plate 1 Farmers registration desk on station (Left) and Mr Amos Ndeke registering farmers at Angelica Kathambi's farm on arrival (Right)

#### 3.0 Orientation of facilitators

The facilitators were extension officers from the Ministry of Agriculture, Tharaka-Nithi County Government, KCSAP extension officers, officers from KALRO, and the students and staffs from University of Embu. Nathan Okoth, a PhD student in the VLII-UOS project from University of Embu, assisted by Professors Mugwe and Muna acquainted the facilitators on the experimental trials. They were briefed about the experiment and its objectives. How to respond to some of the likely concerns by the when showcasing the trials to the farmers for assessment was also addressed. The simplified language to communicate the technologies to the farmers was also agreed on. For uniformity in the assessment, sorghum evaluation criterion was also rehearsed. After the orientation, the facilitators we distributed to various demo sites at the on-station and the on-farms.



Plate 2 Mr Nathan Okoth (Right) during the orientation of the facilitators

### 4.0 Farmer trial visit and evaluation of practices

Farmers were organised into groups of about 10 farmers as they arrived at the demonstration sites and given the sorghum evaluation sheet. The group was then assigned facilitators to take them round the trials while ensuring a maximum of two groups were at the demonstration plots at a time. Social and physical distancing as stipulated by the Ministry of health in Kenya was ensured during the entire time. The farmers were taken through all the 12 and 7 technology plots being tested on-station and on-farms, respectively. They were introduced to the technologies and evaluation criteria based on sorghum performance using the evaluation sheets explained in a simplified and sometimes local language where it necessitated. During the evaluation process they were encourage to ask questions for clarification to ensure they clearly understand the technologies and evaluation process. Sorghum performance evaluation was based on the sorghum height, vigour, leaf colour, the head size and tiller number (Appendix 3). Sorghum height was categorised as tall medium or short, where tall was the best performing; the vigour was either very good, good or poor, where attributes such as the diameter and strength of the stem were used in evaluating the vigour; leaf colour was deep green, green or yellow, where deep green was the most desirable; the head size was either large, medium or small, where large was the best; and tiller number was either several tillers, one or non, where several tiller was indicative of high performance.

The officials from Tharaka-Nithi County led by the Agriculture director, Mr Nickson Mokaya were also taken round the various demo plots on arrival before joining the plenary sessions. Mr Nathan Okoth took them round, briefing them about the experiment and how the community will benefit from it.



**Plate 3** Mrs Beryl Etemesi (Right) showcasing the trials to the farmers at Joseph Mugambi's farm



**Plate 4** Professors Daniel Mugendi (PI) and Jayne Mugwe going round the on-farm trials at Lucy Njagi's farm (Left) and Mr Mercy Rugando showcasing the trials to the farmers at the same site (Right)



**Plate 5** A section of the farmers, Tharaka Nith County officials and facilitators at Alice Kawira's farm during the field day



Plate 6 Mrs Maureen Wairimu showcasing the technologies to the farmers at Mr Stephen Simba's farm during the field day



Plate 7 Mr Stephen Simba (Right), Caroline Mumo, the facilitator (Centre) and a farmer at Stephen Simba's farm during the exhibition



Plate 8 Jane Omenda (Left) and a section of the farmers during the trails exhibition and technology evaluation at Mr Benard Ngoshi's farm during the field day



Plate 9 Mr Amos Ndeke showcasing the technologies to a section of the farmers at Mrs Anjelica Kathambi's farm during the field days



Plate 10 Prof Mugwe at Alice Kawira's farm during the field day with a section of the farmers



Plate 11 Mrs Debra Onyango (Second left) showcasing the technologies to the farmers at the on-station trials



Plate 12 Mr John Kangai (Left) from MoA showcasing the technologies to the farmers at the on-station trials

### 4.1 Question and Answers during demo exhibition

#### Questions and concerns during technology evaluation

- 1. High cost of manure and fertilizer especially when applying at high rate
- 2. How do you handle competitive use of crop residue as mulch and as animal feed?
- 3. How do your control the fall army warm?
- 4. Why control plots perform poorly and with a lot of gaps
- 5. Were all the plots planted at the same time including the control
- 6. Is there consistency in spacing under intercrop and monocrop?
- 7. Cat-worm problem under manure use thus ask for solution
- 8. Tied ridges is a good practice but limited to small scale because they are labour intensive
- 9. Why some of the crop tillers lacked a panicle?
- 10. What were the types of herbicides used?
- 11. The need for researching on the early maturing sorghum varieties.
- 12. The need for more extension work by researchers and agricultural extension officers

#### **Responses given**

- 1. They were advised to only select the technology they are able to implement comfortably depending on resources they have and the ones that suits their farming conditions (Question 1, 2,3 and 8)
- 2. Tremor, Bestock, belt among other pesticides were recommended for fall army warm control (Question 3)
- Control did not have any soil fertility or water conservation measure thus the crops suffered from nutrient insufficiency and moisture stress such that some planting hills completely diminished. Crops performed poorly and lagged behind as a result (Question 4 and 5)
- 4. Cut-worm can be controlled by Royalty pesticide stocked in the local agrovets (Question 7)
- 5. The tillers lacked panicles because they are at different stages of growth with the main crop (Question 9)
- 6. Herbicides were never used. Manual weeding was done by hand hoeing under conventional tillage and weed pulling under minimum tillage (Question 10)
- 7. Research on early maturing variety will be explored (Question 11)

More extension work to be done by researchers in the process of popularising the best bet technologies in addition to the work being done by extension officers. (Question 12)

# 5.0 Sorghum value addition stand

Various products of sorghum were displayed to the farmers. These included sorghum cake, 'sorghum *pilau*', porridge and beer. There were explanations on how to make the various products from sorghum. Importance of value addition was to help preserve the produce aside from improving its market value.



Plate 13 Prof Daniel Mugendi receiving sorghum baked cake from MoA value addition specialist



Plate 14 Sorghum value addition stand manned by the MoA

#### 6.0 Ministry of Agriculture stand

The farmers were educated on conservation agriculture that is being promoted in the region. The principles highlighted were the zero or reduced tillage, crop rotation/intercropping and surface cover (Mulching). With that they the use of jab planter was demonstrated. The jab planter is a seed drill that use can concurrently sow the seed and apply fertilizer at the same time with minimal or zero soil disturbance. The significance of value addition and post-harvest handling were also highlighted by the MoA staff.



Plate 15 Ministry of Agriculture stand (Left) and section of the farmers visiting the stand (Right)

### 7.0 Solution Sacco Microfinance

After visiting the demo plots, value addition stands and having their take away lunch, farmers and in their groups visited Solution SACCO microfinance stand. Here they were introduced to the different services available in the SACCO for farmers. Mrs. Joy Miriti (Kathwana Branch Manager) and her colleagues reiterated to the farmers that the SACCO recognizes that agriculture is the foundation of Kenyan economy and that is why they have developed different programs to cater for farmers financing. She enlightened the farmers on financial literacy, explaining the benefits of saving, how to save with the SACCO and how to acquire loans with them. 13 farmers opened accounts with 6 accounts getting activated during the field day with more farmers promising to open account with them later.



Plate 16 Solution SACCO stand during the field day

The SACCO was very grateful for the opportunity to be part of the field day as they managed to reach their target clients. The farmers in turn benefits as they identify the solution to their financial needs in promoting agriculture

#### 8.0 Technology evaluation methodology

Farmers preference to the technology was determined by developing an evaluation form to assess the performance of each technology. The technology preference and performance was based on sorghum performance. The form had a set of various crop visible qualities and of interest to the farmers. The qualities evaluated were the crop vigour, leaf colour, height, tiller number and head size. Crop vigour was scored between 1 and 3, where 3 was very good, 2 good and 1 poor. Plant height was scores as vary tall for 3, tall for 2 and short for 1. Leaf color was scored as 3 for the deep green, 2 for the green and 1 for yellow pigmentation. Tiller number was scored as 3 for several tillers, 2 for one and 1 for no tiller. Head size was scored as 3 for the large, 2 for medium and 1 for small.

Farmers choices to the technologies were determined by first calculating their preference index (PI) as per the equation 1.

Prefence Index = 
$$\frac{n}{N}$$
 (1)

Where, n = Total score obtained by respondent (s), N = Maximum obtainable score (15).

The preference test developed was standardized by analyzing its content validity. After obtaining the Preference index scores of all the respondents, mean ( $\mu$ ) and standard deviation of the index (s.d) were calculated and the respondents were classified into three categories. The respondent's evaluation having score in the range of ( $\mu \pm s.d$ ) were categorized as having high performance hence preferring the technology, but not strongly, and those having score lower and greater than ( $\mu \pm s.d$ ) were categorized to be poor, thus no preference and very high performance, hence high preference to the technology, respectively.

#### 9.0 Technology evaluation results

From the farmers' evaluation of the technologies both on-station and on-farms, performance of the technologies were consistent. The treatments that performed better on-station generally performed better on-farms (Table 1 and 2). Technologies with high rate of manure and fertilizer had the very good crop vigour, deep green colouration, large head size with several tillers all indicative of good performance (Table 1). Control significantly perform poorly

across all the assessment parameters compared to other treatments (Table 1). Generally, differences between the high and moderate rate of manure and fertilizer rates was not apparent from the farmer assessment in general.

Plot	Treatment	Crop	Leaf	Sorghum	Tiller	Head	Comment
		Vigour	Colour	Height	Number	Size	
1	MF(L)Ct	Good	Green	Tall	None	Large	Average
2	MF(M)MtR	Good	Green	Tall	Several	Large	Average
3	MF(M)Tr	Very good	Green	Tall	Several	Large	Good
4	MF(L)Tr	Good	Green	Tall	One	Large	Average
5	MF(H)MtR	Very good	Deep green	Tall	Several	Large	Good
6	MF(H)Ct	Very good	Deep green	Tall	Several	Large	Good
7	MF(M)Ct	Good	Green	Tall	Several	Large	Average
8	С	Poor	Yellow	Short	None	Small	Poor
9	MF(H)Tr	Very good	Deep green	Tall	Several	Large	Good
10	MF(L)MtR	Good	Green	Tall	None	Large	Average
11	MI	Good	Deep green	Tall	None	Large	Average
12	MIC	Poor	Yellow	Short	None	Small	Poor

**Table 1** On-station technology evaluation results

MF(L)Ct=Manure plus fertilizer under low rate under conventional tillage

MF(M)MtR= Manure plus fertilizer under moderate rate under minim tillage with mulch

MF(M)Tr=Manure plus fertilizer under moderate rate plus tied ridging

MF(L)Tr =Manure plus fertilizer under low rate plus tied ridging

MF(H)MtR=Manure plus fertilizer under high rate under minimum tillage with mulch

MF(H)Ct=Manure plus fertilizer under high rate under conventional tillage

MF(M)Ct =Manure plus fertilizer under moderate rate under conventional tillage

C=Conventional tillage without any input

MF(H)Tr= Manure plus fertilizer under high rate plus tied ridging

MF(L)MtR=Manure plus fertilizer under low rate under minimum tillage with mulch

MI=Managing Beneficial Interactions in Legume Intercrops (Moderate manure plus fertilizer) MIC=Managing Beneficial Interactions in Legume Intercrops (No input)

Plot	Treatment	Crop	Leaf	Sorghum	Tiller	Head Size	Comment
		Vigour	Colour	Height	Number		
1	MF(M)Tr	Good	Green	Tall	One	Medium	Good
2	MF(H)Tr	Good	Green	Tall	Several	Large	Good
3	MI	Very good	Green	Tall	One	Medium	Good
4	MF(M)Ct	Good	Green	Tall	One	Medium	Good
5	С	Poor	Yellow	Short	None	Small	Poor
6	MF(H)MtR	Very good	Deep green	Tall	Several	Large	Good
7	MF(H)Ct	Good	Green	Tall	Several	Large	Good

**Table 2** On-farms technology evaluation results

The consistency in the technologies performance both on-station and on-farm is due to the fact that the same technologies that were implemented on-farms were the selected best performing technologies on-station. The on-fam technology selection was purely based on the best performing ones. This was to ensure only the best performing technologies are implemented on the farmers' fields for popularization in the effort to boost crop productivity in the region. High rate of manure and fertilizer rated emerged as the best performing technologies even the there was no big difference compared to the moderate rate as per the farmers' evaluation application rate. This could mean it's better for farmers to adopt the moderate rate if the its more economical in terms of production resources. However, more statistical and economic evaluation needs to be conducted scientifically to enable proper recommendation. The consistently poor performance under control compared to any other technology as per the farmers' evaluation could be attributed to nutrient deficiency and soil moisture stress. This is because under the control plots, there was no soil fertility intervention nor soil and water conservation measure. Thus the plots were vulnerable to the various stresses and deficiencies that hindered proper crop growth and development.

The on-farm trials were under its first cropping season unlike the on-station that was on the fourth cropping season, thus the technology testing on-farms needs to be conducted for few more seasons to make conclusive determination of the performance of the technologies on-farms.

#### 10.0 Plenary session

After visiting the experimental trials and other stands, a plenary session was held. Professors Mugendi, Mugwe and Muna facilitated the sessions. Due to the health protocols set by the Ministry of Health to cube the spread of Covid 19 pandemic, the sessions were conducted in segments. This was to ensure, there was no big crowds gathering at any point. The farmers organized as a group where taken through the experimental trials, visit the various exhibition stands then a brief plenary session was held as they take their lunch before releasing them.

During the plenary, various stakeholders from MoA, Tharaka-Nithi Conty, KALRO, University of Embu, Kenyatta University, Solution SACCO, water supply company and Nkarini Mixed Secondary school management were introduced. Various encouraged the farmers to implement the best performing technologies in their farms to boost their agriculture. In addition, they were encouraged to partner with other stakeholder, such as the finance institutions, agro dealers, and extension officers in the effort to improve their income from production. Value addition was encouraged to ensure their products attracts diverse markets and reduce wastages and exploitation by the middle men.



Plate 17 Officer from water supply company addressing farmers during the plenary session



Plate 18 Mr Nickolas Mokaya, Agriculture Director of Tharaka-Nithi County address farmers during the plenary session



Plate 19 Prof Daniel Mugendi addressing farmers during the plenary session (Left) and Professors Mugendi, Mugwe and Muna following the programme during the plenary session (Right)

# **11.0 Concluding Remarks**

The closing remark was made by the Mr Mokaya, Agriculture director of Tharaka-Nithi County who encouraged the farmers to put more emphasis on agriculture before Prof Mugendi officially close the ceremony. The field day was closed with a word of prayer from one of the farmers at 3.30 pm.

**Appendix 1 Attendance list** 

SN	Name	Gender	Sublocation	Location	Ward	Group	Contact
1	Savera	F	Gaceraaka	Nkarini	Chiakariga	Arimi	None
2	Murugi		NH	NH		Mothers	0700 446
2	Simon	IVI	NKarini	NKarini	Chiakariga	Ass.Chief	0720 446 420
3	lames Nieru	М	Gaceraaka	Nkarini	Chiakariga	Ass Chief	0711 587
5	James Njera	101	Gaeeraaka	NKariin	Спаканда	Assemen	335
4	Martha	F	Nkarini	Nkarini	Chiakariga	Borehole	None
	Mugambi				Ū		
5	Washington	Μ	Nkarini	Nkarini	Chiakariga	Ciekamba	0790 213
	Mawira						570
6	Beatrice	F	Nkarini	Nkarini	Chiakariga	Faith	0705 689
7	Gaceri	-	Nikovini	Nikovini	Chieleriee	Casari	475 None
/	Janiner	F	INKATINI	мкаттт	Chiakariga	Gacen	None
8	losphine	F	Nkarini	Nkarini	Chiakariga	Gatethia	0700 262
Ũ	Karimi				emananga	Caterna	961
9	Catherine	F	Nkarini	Nkarini	Chiakariga	Gatundu	0716 986
	Gaceri				_		289
10	Margaret	F	Nkarini	Nkarini	Chiakariga	Gatundu	None
	Wandatho						
11	Bernard	Μ	Nkarini	Nkarini	Chiakariga	Gatundu	0720 090
12	Ngochi		Nikarini	Nkorini	Chiekerige	Caturadu	203
12	Kathure		INKALITI	INKdilli	Chiakanga	Gatunuu	0/90 12/
13	Geofrey	М	Nkarini	Nkarini	Chiakariga	Imani	0710 545
_	Kirugi		-			-	497
14	Samwel	М	Nkarini	Nkarini	Chiakariga	Imani	0799 647
	Kirugi						996
15	Rhoda	F	Chiakariga	Chiakariga	Chiakariga	Jitegemee	None
10	Mbaka	-	N La 1 va la 1	NL-1	N La 1 va la 1		0744.000
16	Prof. Munan	F	Nairobi	Nairobi	Nairobi	K.U	0/11 986 788
17	Prof Mugwe	F	Nairohi	Nairohi	Nairohi	KII	0719 366
1,	1 Ion Magwe		Nullosi	Nulloof	Nullosi	K.O	697
18	Tabitha	F	Nkarini	Nkarini	Chiakariga	Kaguni	0720 238
	Kanyua				_	_	830
19	Catheline	F	Nkarini	Nkarini	Chiakariga	Kaguni	0710 668
	Nthure						557
20	Lucy Gatiria	F	Nkarini	Nkarini	Chiakariga	Kaithe	0795 368
21	Julia		Nikarini	Nkorini	Chiekerige	Kanyanga	125
21	Ciekamba	F	INKATITI	INKATITI	Chiakariga	Kanyange	239
22	Sabina	F	Gaceraaka	Nkarini	Chiakariga	Kanvange	0715 284
	Gatura					,	232
23	Paulina	F	Gaceraaka	Nkarini	Chiakariga	Kanyange	0724 211
	Kanyaru						574
24	Ziporah	F	Gaceraaka	Nkarini	Chiakariga	Kanyange	0712 664
	Geofrey						041

25	Lucy Kawira	F	Nkarini	Nkarini	Chiakariga	Karaa	0720 418 896
26	Grace Karegi	F	Nkarini	Nkarini	Chiakariga	Karembo	0702 329 835
27	Pamela Kathambi	F	Tunyai	Tunyai	Chiakariga	Kathekia	None
28	Samwel Mutuma	М	Tharaka Nithi C.	Tharaka Nithi	Chiakariga	КСАР	0722 943 650
29	Elizabeth Maira	F	Nkarini	Nkarini	Chiakariga	Machebe	0702 962 615
30	Lucy Gatiria	F	Nkarini	Nkarini	Chiakariga	Maendeleo B	0791 089 890
31	Martin Mwasia	М	Nkarini	Nkarini	Chiakariga	Maendeleo B	0712 379 288
32	Mary Gatura	F	Nkarini	Nkarini	Chiakariga	Maendeleo B	0742 213 346
33	Secilia Kaugu	F	Nkarini	Nkarini	Chiakariga	Maendeleo B	0759 348 237
34	Jacinta Kagendo	F	Nkarini	Nkarini	Chiakariga	Maendeleo B	0798 548 790
35	Justa Karugo	F	Nkarini	Nkarini	Chiakariga	Maendeleo B	0721 727 181
36	Monica Mbura	F	Nkarini	Nkarini	Chiakariga	Maendeleo B	0748 348 845
37	Josphine Karekia	F	Nkarini	Nkarini	Chiakariga	Maendeleo B	None
38	Faith Gatwiri	F	Nkarini	Nkarini	Chiakariga	Maendeleo B	0759 531 313
39	Catherine Kabiru	F	Nkarini	Nkarini	Chiakariga	Maendeleo B	0716 204 535
40	Charity Makena	F	Nkarini	Nkarini	Chiakariga	Maendeleo B	0792 243 776
41	Lucy Gatiria	F	Nkarini	Nkarini	Chiakariga	Maendeleo B	0791 089 890
42	Mary Kawira	F	Tunyai	Tunyai	Chiakariga	Mashinani Digital	0703 177 437
43	Josphat Mutegi	М	Nkarini	Nkarini	Chiakariga	Mashinani Digital	0746 240 830
44	Moses Kirimi	М	Nkarini	Nkarini	Chiakariga	Mashinani Digital	0705 973 726
45	Jospeter Muthuri	М	Nkarini	Nkarini	Chiakariga	Mashinani Digital	0728 418 297
46	Florence Waua	F	Tunyai	Tunyai	Chiakariga	Matendo	0720 455 022
47	Esther Gitonga	F	Nkarini	Nkarini	Chiakariga	Matendo	0706 621 358
48	Grace Gatiria	F	Nkarini	Nkarini	Chiakariga	Matendo	0707 118 189
49	Christine Mumbi	F	Tunyai	Tunyai	Chiakariga	Matendo	0704 718 157
50	Judith Kawira	F	Kamarandi	Chiakariga	Chiakariga	Matendo	0708 601

							370
51	Jane Karimi	F	Nkarini	Nkarini	Chiakariga	Matendo	0713 477
50	<b></b>	-	AUL 1.1				740
52	Estner	F	INKarini	NKarini	Chiakariga	Iviatendo	0791 840
52	Many Joseph	С	Tupyai	Tupyai	Chiakariga	Matanda	920
55	Mary Joseph	Г	Tuliyai	Tuliyai	Chiakanga	Watenuo	516
54	Faith Kawira	F	Nkarini	Nkarini	Chiakariga	Matendo	0707 752
5.			, and the second s	i i i i i i i i i i i i i i i i i i i	emakanga	Materiao	173
55	Phrisca	F	Nkarini	Nkarini	Chiakariga	Matendo	0740 731
	Kathambi				C C		649
56	Florence	F	Nkarini	Nkarini	Chiakariga	Matendo	0713 618
	Mwithi						033
57	Shandrak	М	Nkarini	Nkarini	Chiakariga	Matendo	0712 300
	Kithaka						502
58	Jane Karimi	F	Nkarini	Nkarini	Chiakariga	Matendo	0713 477
		_					740
59	Florence	F	Tunyai	Tunyai	Chiakariga	Matendo	0720 455
60	Watua		Nilianiai	Nilianini	Chielestine	N A a traversita	022
60	Faith Kawira	F	INKarini	INKarini	Chiakariga	iviatendo	172
61	Mary Joseph	C	Тирузі	Тирузі	Chiakariga	Matendo	1/5
01	Mary Joseph	Г	Tuliyai	Tuliyai	Chiakanga	Watenuo	516
62	Fsther	F	Nkarini	Nkarini	Chiakariga	Matendo	None
02	Gatiria		, and the second s	, and a second s	emakanga	Materiao	None
63	Jelica	F	Tunvai	Tunvai	Chiakariga	Matendo	None
	Muthoni		,	,	C C		
64	Henry	М	Tunyai	Tunyai	Chiakariga	Meru Hubs	0713 078
	Mbarire						370
65	Rose Njeru	F	Tunyai	Tunyai	Chiakariga	Meru Hubs	0706 798
							623
66	M.Mokaya	Μ	Director	Tharaka	Tharaka	MOA	0723 856
67			MOA	Nithi	Nithi		041
6/	Kagai	IVI	I haraka	Chiakariga	I haraka	MOA	0724 504
69	Luka Citanga	N.4	Tharaka	Marimanti	Tharaka	MOA	681
00	Luke Gitoliga	IVI	Nithi C	Warmanu	Nithi	IVIOA	
69	Angelica	F	Nkarini	Nkarini	Chiakariga	Mutaranga	0711 222
05	Kathambi	•		, inclusion of the second seco	emakanga	Welfare	549
70	Joseph	М	Nkarini	Nkarini	Chiakariga	Mutaranga	0717 029
	mutegi				Ũ	Welfare	767
71	James	М	Nkarini	Nkarini	Chiakariga	Mutaranga	0724 995
	Muchai					Welfare	699
72	Rose Nkatha	F	Nkarini	Nkarini	Chiakariga	Mutaranga	0714 328
						Welfare	920
73	Virginia	F	Nkarini	Nkarini	Chiakariga	Mutaranga	0715 357
	Simon	-				Welfare	333
74	Cecilia	F	Nkarini	Nkarini	Chiakariga	Mutaranga	010 589
75	Ruguru		Nilsenin	Nilianist	Chielester	Welfare	199
/5	Lydia Kaindi	F	inkarini	INKarini	Chiakariga	wutaranga	0/14 6/4
						wenare	910

76	Aliet Muriungi	F	Tunyai	Tunyai	Chiakariga	Mutethia	0792 220 249
77	Penina Ciambui	F	Nkarini	Nkarini	Chiakariga	Mutethia	0721 803 457
78	Rachel Muthoni	F	Nkarini	Nkarini	Chiakariga	Mwangaza	0746 758 146
79	Esther Wanjiru	F	Nkarini	Nkarini	Chiakariga	Mwavuri	0705 010 810
80	Peter Nthiga	М	Nkarini	Nkarini	Chiakariga	Mwavuri	0701 107 814
81	Silas Majira	М	Nkarini	Nkarini	Chiakariga	Mwavuri	None
82	Catherine Kambura	F	Nkarini	Nkarini	Chiakariga	Mwichuiri	0707 902 752
83	Josphine Ciang'ombe	F	Nkarini	Nkarini	Chiakariga	Nkarini	0720 901 969
84	Janifer Kajira	F	Tunyai	Tunyai	Chiakariga	None	0792 140 193
85	Josphat Makembo	М	Nkarini	Nkarini	Chiakariga	None	0796 303 662
86	Gitonga Njeru	F	Nkarini	Nkarini	Chiakariga	None	None
87	Eunice Kawira	F	Nkarini	Nkarini	Chiakariga	None	None
88	Josphine Chepkurui	F	Nkarini	Nkarini	Chiakariga	None	0702 128 197
89	Nicholas Gitonga	М	Gaceraaka	Nkarini	Chiakariga	None	None
90	Isaak Mugambi	М	Chiakariga	Chiakariga	Chiakariga	None	0705 062 039
91	Monica Kagoki	F	Gaceraaka	Nkarini	Chiakariga	None	0792 141 232
92	Augustine Nyaga	М	Tunyai	Tunyai	Chiakariga	None	0723 881 297
93	Mwathi Njagi	М	Nkarini	Nkarini	Chiakariga	None	0741 147 609
94	Julius Chabari	М	Nkarini	Nkarini	Chiakariga	None	None
95	Martin Mugambi	М	Nkarini	Nkarini	Chiakariga	None	0712 361 291
96	Moses Kirimi	М	Nkarini	Nkarini	Chiakariga	None	0792 612 838
97	Maryjane Muriungi	F	Nkarini	Nkarini	Chiakariga	None	0721 598 800
98	Joseph Mutegi	М	Nkarini	Nkarini	Chiakariga	None	None
99	Hellen Mucee	F	Nkarini	Nkarini	Chiakariga	None	0791 338 378
100	Fides Kamene	F	Nkarini	Nkarini	Chiakariga	None	0791 338 375
101	Lydia Mukami	F	Nkarini	Nkarini	Chiakariga	None	0704 914 206

102	Mary	F	Nkarini	Nkarini	Chiakariga	None	0799 857
102	Shandrak	N/I	Nkarini	Nkarini	Chiakariga	None	0710 100
105	Muriungi	101	INKALILI	INKALITI	Chiakanga	None	296
104	Caroline	F	Nkarini	Nkarini	Chiakariga	None	0742 753
105		N.4	Nikovini	Nikovini	Chieleriee	Neze	838
105	Paul Kinyua	IVI	INKarini	INKARINI	Chiakariga	None	309
106	Steven	М	Nkarini	Nkarini	Chiakariga	Nturubani	0710 102
	Simba						304
107	Mr Mutwiri	Μ	Nkarini	Nkarini	Chiakariga	Principal	0721 272
100		-				Nkarini	094
108	Fridah Karimi	F	Nkarini	Nkarini	Chiakariga	Sapad	0790 095
109	lov Miriti	F	Kathwana	Kathwana	Igamha	Solution	0739 336
105	JOy WIIITEI	1	Kathwana	Ratiiwana	ng'ombe	Sacco	100
110	Dority	F	Kathwana	Kathwana	Igamba	Solution	0797 738
	Mukina				ng'ombe	Sacco	848
111	Winfred	F	Kathwana	Kathwana	Igamba	Solution	0702 562
	Mukami				ng'ombe	Sacco	523
112	Paul Mwangi	М	Kathwana	Kathwana	Igamba	Solution	0700 567
					ng'ombe	Sacco	106
113	Alex Rangau	Μ	Kathwana	Kathwana	Igamba	Solution	None
					ng'ombe	Sacco	
114	Margaret	М	Kathwana	Kathwana	Igamba	Solution	0714 891
	Nyamu				ng'ombe	Sacco	818
115	Janet Karega	F	Nkarini	Nkarini	Chiakariga	St Ann	0795 303 198
116	Nancy Karimi	F	Nkarini	Nkarini	Chiakariga	St Joan	0710 768 202
117	Mwarania Chabari	М	Nkarini	Nkarini	Chiakariga	St Mary	None
118	Gituma Njagi	М	Nkarini	Nkarini	Chiakariga	Student	None
119	Mike Nieru	М	Nkarini	Nkarini	Chiakariga	Student	None
120	Moses Mbae	М	Nkarini	Nkarini	Chiakariga	Student	None
121	Mukui	M	Nkarini	Nkarini	Chiakariga	Student	None
	Murithi				0		
122	Eric Mwenda	М	Nkarini	Nkarini	Chiakariga	Student	None
123	Denis Nyaga	М	Nkarini	Nkarini	Chiakariga	Student	None
124	Patrick	М	Nkarini	Nkarini	Chiakariga	Student	None
	Nyaga						
125	Timothy	М	Nkarini	Nkarini	Chiakariga	Student	None
	Murithi						
126	Charity	F	Nkarini	Nkarini	Chiakariga	Student	None
127	iviutegi		Nikowiwi	Nkorini	Chickerizz	Ctudant	Nora
12/	Mwathi		INKATINI	inkarini	Chiakariga	Student	None
128	Lucy Njau	F	Nkarini	Nkarini	Chiakariga	Student	None
129	Esther Kendi	F	Nkarini	Nkarini	Chiakariga	Student	None
130	Robert Njagi	М	Nkarini	Nkarini	Chiakariga	Teacher	
		1	1	1	-	1	1

						Nkarini	
131	Doreen Mwirigi	F	Chuka	Chuka	chuka	Thima Machinerie s	0716 283 079
132	Nick Gitonga	м	Chuka	Chuka	chuka	Thima Machinerie s	0700 464 505
133	Joseph Mugambi	М	Nkarini	Nkarini	Chiakariga	Tuinuwane	0700 308 246
134	Jeremiah Muthamia	М	Nkarini	Nkarini	Chiakariga	Tuinuwane	0713 138 514
135	Jerusha Kanini	F	Nkarini	Nkarini	Chiakariga	Tuinuwane	0741 581 362
136	Silas Kiragu	Μ	Embu	Embu	Embu	U.O.E	0712 595 095
137	Jackline Kanana	F	Embu	Embu	Embu	U.O.E	0702 585 869
138	Beryl Etemesi	F	Embu	Embu	Embu	U.O.E	0710 185 990
139	Susan Wairimu	F	Embu	Embu	Embu	U.O.E	0717 406 051
140	Mercy Rugendo	F	Embu	Embu	Embu	U.O.E	
141	Jane Omenda	F	Embu	Embu	Embu	U.O.E	0717 841 612
142	Nathan Okoth	М	Embu	Embu	Embu	U.O.E	0713 192 633
143	Amos Ndeke	М	Embu	Embu	Embu	U.O.E	0700 417 091
144	Murangiri Boniface	М	Embu	Embu	Embu	U.O.E	0711 329 490
145	Francis Murage	М	Embu	Embu	Embu	U.O.E	0702 685 528
146	Msafiri Collins	М	Embu	Embu	Embu	U.O.E	
147	Mwenda	М	Embu	Embu	Embu	U.O.E	0701 155 836
148	Steven	Μ	Embu	Embu	Embu	U.O.E	
149	Kiarago	Μ	Embu	Embu	Embu	U.O.E	
150	Debra Onyango	F	Embu	Embu	Embu	U.O.E	
151	John Kinyua	Μ	Embu	Embu	Embu	U.O.E	
152	Catherine Kuthea	F	Embu	Embu	Embu	U.O.E	
153	Maureen Njenga	F	Embu	Embu	Embu	U.O.E	0707 069 347
154	Regina Karimi	F	Nkarini	Nkarini	Chiakariga	Umoja	0701 321 330
155	Alice Kawira	F	Nkarini	Nkarini	Chiakariga	Umoja	0718 077 122

156	Mary Kaura	F	Nkarini	Nkarini	Chiakariga	Umoja	0717 339 275
157	Paul Kimathi	М	Nkarini	Nkarini	Chiakariga	Umoja	0716 708 763
158	Jane Kambura	F	Nkarini	Nkarini	Chiakariga	Umoja	0708 703 101
159	Peter Mugambi	М	Nkarini	Nkarini	Chiakariga	Umoja	0720 717 431
160	Janet Mugao	F	Tunyai	Tunyai	Chiakariga	Umoja	0704 289 739
161	Evelyn Kanja	F	Nkarini	Nkarini	Chiakariga	Upendo	0790 196 748
162	Francisca Gatwiri	F	Nkarini	Nkarini	Chiakariga	Upendo	0793 714 838
163	Mary Kagendi	F	Nkarini	Nkarini	Chiakariga	Upendo	0714 530 457
164	Martha Kang'aria	F	Nkarini	Nkarini	Chiakariga	Upendo	0725 905 794
165	Lydia Muthoni	F	Nkarini	Nkarini	Chiakariga	Upendo	0797 431 850
166	Carumerina Munda	F	Nkarini	Nkarini	Chiakariga	Upendo	0721 360 724
167	Sabina Karimi	F	Nkarini	Nkarini	Chiakariga	Upendo	0797 244 695
168	Prof. Mugendi	М	Embu	Embu	Embu	VC U.O.E	0717 285 305
169	Sisto Marunjuri	М	Tunyai	Tunyai	Chiakariga	Water Group	0714 596 075
170	Jacinta Kajira	F	Nkarini	Nkarini	Chiakariga	Wayani	0792 140 193
171	Julieta Karimi	F	Nkarini	Nkarini	Chiakariga	Wemenyi	0711 207 090
172	Regina Karimi	F	Nkarini	Nkarini	Chiakariga	Weru	0792 612 852
173	Selina Muthoni	F	MOA	Tharaka Nithi	Chiakariga	MOA	0705 963 934
174	Agnes Mwenda	F	MOA	Tharaka Nithi	Chiakariga	MOA	0721 327 843
175	Tersco Njeru	М	KALRO	Tharaka Nithi	Marimanti	KALRO	
176	Eliud Kagete	М	KALRO	Embu	Embu	KALRO	

# Appendix 2 Field day Program

# PROGRAMME FOR THE VLIR-UOS FIELD DAY AT NKARINI MIXED DAY SECONDARY SCHOOL AND ON-FARMS TRIALS IN THARAKA SOUTH SUB-COUNTY ON 12<sup>TH</sup> JANUARY 2021

Participants: Farmers, MoA-TNC, KCAP, KALRO

FACILITAT	ORS – VLIR (Prof. Mugendi/Mugwe/Ngetich/Muna/Nyabuga/Dr Milka/Sijali and students-UoEm) and MoA (PDA, DAO, and DAEO's office)
Time	Activity/Person responsible
8.00-9.00	Morning hour mobilisation using public address system (Luke Gitonga and Amos Ndeke)
9:00-9:30	Rehearsal and orienting the resource persons at Nkarinin Secondary site ( <b>Prof</b> Ngetich/Nathan)
10:00 -10:30	Welcoming participants & Registration at various sites (Jane, Maureen, Amos, Kanana, Mercy, Murangiri, Susan and Nathan)
9:30 - 10:00	Opening remarks and prayers Luke Gitonga (MoA)/Prof Mugwe/Prof Muna and EABL representative
10:00 -12.00	<ul> <li>Visit demonstrations/ Stations at various demo sites (Farmers/Resource persons) <ol> <li>Seed and agronomy-(Agro-dealers)</li> <li>SWC and ISFM Plots (VLIR team)</li> </ol> </li> <li>Farm management (MoA-TNC) <ol> <li>Implements (Conservation Agriculture)-(MoA-TNC)</li> <li>Post-harvest handling &amp; storage-(MoA-TNC)</li> <li>Plant clinic-(MoA-TNC)</li> <li>Livestock (Production &amp; veterinary)-(MoA-TNC)</li> <li>Agro-dealers</li> <li>Financial services</li> <li>Sorghum Marketing-EABL</li> </ol> </li> </ul>
12:00-1:00	Farmers from the on-farm demos arrive and are address by <b>Mr Njagi</b> (Principle Nkarini Secondary School) and VLIR project members (Prof Mugendi/Prof Mugwe/Prof Muna/Prof Ngetich/Prof Nyabuga/Sijali after

visiting on-station demos

# 1.00 – 2.00 HEALTH BREAK (Facilitator – Susan / Maureen/Catherine)

	Plenary FACILITATOR (MC) – Mr. Luke Gitonga (MoA)
2:00 - 3:00	Introductions and Recap of field activities (VLIR team/MC/MoA/KCAP/
	KALRO)
3:30 - 3:30	Collective Marketing, Commercial Villages Approach, Group dynamics/management (EABL & MoA-TNC)
3.30 - 4.00	Closing remarks and vote of thanks (VLIR team, Prof Mugendi)
4.00	Prayers and departure

### **OTHER DUTIES**

10.00-12.00	Coordinating transition of farmers from on-farm to on-station- ( <b>Prof</b> <b>Nyabuga/Muna with assistance of facilitators in charge of the station</b> )
10.00-12.00	Supervision of facilitation – (Prof Mugwe/Sijali)
8.00-4.00pm	Any other Duty-(Nathan and Susan)

# Manning of stations/Demo plots

S/N	Station/Demo site	Facilitator	<b>Registration and Rapporteur</b>
			(Notes and photography)
1	On-Station	MoA-TNC	Nathan Okoth/Murangiri
2	Alice Kawira	Collins Msafiri	Jackline Kanana
3	Lucy Njagi	MoA-TNC	Mercy Rugendo
4	Joseph Mugambi	Beryl Etemesi	Susan Wairimu
5	Benard Ngochi	Francis Mucira	Jane Omenda
6	Stephen Simba	Catherine Kuthea	Maureen Njenga
7	Angelica Kathambi	John Kinyua	Amos Ndeke

Station/	Technology	Crop	Leaf	Plant	Tiller	Head	Comment
Farmer		Vigour	colour	height	number	size	
Aalice	MF(H)Ct	1	2	1	3	1	
Kawira	/						
	MF(H)Tr	1	1	1	3	1	
	C	3	2	2	2	3	
	MI	2	2	3	2	1	
	MF(M)Tr	1	1	1	3	2	
	MF(H)MtR	2	2	1	3	2	
	MF9M)Ct	2	2	1	3	2	
Alice 2	MF(H)Ct	1	1	2	3	1	
	MF(H)Tr	1	1	2	3	1	
	C	3	2	3	1	3	
	MI	2	2	2	1	3	
	MF(M)Tr	1	1	2	3	2	
	MF(H)MtR	2	2	2	3	3	
	MF9M)Ct	2	2	2	3	2	
		-	_	-	C	-	
Alice 3	MF(H)Ct	1	1	2	3	1	
	MF(H)Tr	1	1	2	3	1	
	С	3	1	2	1	3	
	MI	2	2	2	3	1	
	MF(M)Tr	1	1	2	3	1	
	MF(H)MtR	2	2	2	3	1	
	MF9M)Ct	1	1	2	3	1	
Alice 4	MF(H)Ct	1	2	3	3	1	
	MF(H)Tr	1	- 1	3	3	1	
	C	3	1	2	1	3	
	MI	1	2	3	3	1	
	MF(M)Tr	1	2	3	3	1	
	MF(H)MtR	1	3	3	3	1	
	MF9M)Ct	1	2	3	2	1	
	in miter	1	2	5	2	1	
Alice 5	MF(H)Ct	1	2	3	3	1	
	MF(H)Tr	1	1	3	3	1	
	С	3	1	2	1	3	
	MI	1	2	3	3	1	
	MF(M)Tr	1	2	3	3	1	
	MF(H)MtR	1	3	3	3	1	
	MF9M)Ct	1	2	3	2	1	
	,						
Alice 6	MF(H)Ct	1	1	1	1	1	
	MF(H)Tr	1	1	1	1	1	
	С	3	3	3	1	1	

Appendix 3 Farmer evaluation sheet

	MI MF(M)Tr MF(H)MtR MF9M)Ct	1 1 1 2	1 1 2 2	1 2 2 2	1 1 1 1	1 2 2 2
Alice 7	MF(H)Ct MF(H)Tr C MI MF(M)Tr MF(H)MtR MF9M)Ct	1 2 2 3 1 1	1 2 1 2 2 2 1	1 2 2 2 3 2 2	1 1 1 1 1 1 1	1 2 2 3 2 1
Alice 8	MF(H)Ct MF(H)Tr C MI MF(M)Tr MF(H)MtR MF9M)Ct	1 1 3 2 2 1 2	1 2 2 1 1 2	2 2 3 2 2 2 2 2	1 2 3 2 1 2 1	1 2 3 2 2 2 2 2
Alice 9	MF(H)Ct MF(H)Tr C MI MF(M)Tr MF(H)MtR MF9M)Ct	1 1 3 2 2 1 2	1 1 2 2 2 1 2	2 2 3 2 2 2 2 2	1 2 1 2 2 2 2	2 2 2 2 2 2 2 2 2 2
Alice 10	MF(H)Ct MF(H)Tr C MI MF(M)Tr MF(H)MtR MF9M)Ct	1 1 3 1 1 2 1	1 1 3 2 1 2 1	2 1 3 2 2 3 1	3 3 2 3 3 3 3 3	1 1 2 2 2 2 1
Alice 11	MF(H)Ct MF(H)Tr C MI MF(M)Tr MF(H)MtR MF9M)Ct	1 1 3 1 1 2 2	1 2 2 1 2 1 1	1 2 3 2 2 2 2 2	1 1 1 1 1 1	1 2 2 2 2 2 2 2 2
Alice 12	MF(H)Ct	1	1	1	1	1

	MF(H)Tr	1	1	1	1	1
	С	3	2	3	1	3
	MI	1	1	2	1	2
	MF(M)Tr	1	2	2	1	2
	MF(H)MtR	2	1	2	1	2
	MF9M)Ct	2	1	2	1	2
Alice 13	MF(H)Ct	1	1	1	1	1
	MF(H)Tr	2	2	1	1	1
	С	3	3	3	3	3
	MI	1	2	2	2	2
	MF(M)Tr	1	1	1	1	1
	MF(H)MtR	1	1	1	1	1
	MF9M)Ct	1	1	1	2	1
Alice 14	MF(H)Ct	1	1	2	1	1
	MF(H)Tr	1	1	2	1	1
	С	3	3	3	3	3
	MI	1	1	2	3	1
	MF(M)Tr	1	1	2	1	2
	MF(H)MtR	1	1	2	3	1
	MF9M)Ct	1	1	2	2	1
Alice 15	MF(H)Ct	1	1	2	1	1
	MF(H)Tr	1	1	2	1	1
	С	3	3	2	1	3
	MI	1	1	2	3	1
	MF(M)Tr	1	1	2	3	1
	MF(H)MtR	1	1	2	3	1
	MF9M)Ct	1	1	2	3	1
Alice 16	MF(H)Ct	1	2	2	3	1
	MF(H)Tr	1	2	2	3	1
	C	3	3	3	1	3
	MI	2	2	2	2	2
	MF(M)Tr	2	2	2	3	2
	MF(H)MtR	2	3	2	3	2
	MF9M)Ct	2	2	1	2	2
Alice 17	MF(H)Ct	1	2	3	3	1
	MF(H)Tr	1	1	3	3	2
	С	3	2	2	2	3
	MI	1	1	2	3	1
	MF(M)Tr	1	1	1	3	1
	MF(H)MtR	2	3	2	2	2
	MF9M)Ct	2	2	2	2	2

Simba 1	MF(H)Ct	2	2	3	1	2
	MF(H)Tr	1	1	2	2	2
	C	3	2	3	1	3
	MI	1	1	2	2	2
	MF(M)Tr	1	1	2	2	2
	MF(H)MtR	2	2	3	1	3
	MF9M)Ct	1	1	1	3	1
Simba 2	MF(H)Ct	2	2	1	3	2
	MF(H)Tr	1	1	3	3	1
	C	3	2	2	3	3
	MI	2	3	2	3	2
	MF(M)Tr	2	2	2	3	2
	MF(H)MtR	2	3	2	3	2
	MF9M)Ct	1	1	1	3	1
Simba 3	MF(H)Ct MF(H)Tr C MI MF(M)Tr MF(H)MtR MF9M)Ct	2 1 3 1 1 1 2	2 1 2 1 1 1 2	2 2 2 2 2 2 1 2	2 3 2 2 3 1 2	2 1 2 2 1 2 2
Simba 4	MF(H)Ct MF(H)Tr C MI MF(M)Tr MF(H)MtR MF9M)Ct	2 1 3 2 1 1 1	2 2 2 1 1 1	1 2 3 2 2 2 2 2	3 3 2 3 2 3 3	2 1 3 1 1 2 1
Simba 5	MF(H)Ct MF(H)Tr C MI MF(M)Tr MF(H)MtR MF9M)Ct	2 1 3 2 1 2 1	2 1 2 3 2 2 1	1 3 2 2 2 2 2 1	3 3 3 3 3 3 3 3	2 1 2 2 2 2 1
Simba 6	MF(H)Ct	2	2	2	2	2
	MF(H)Tr	1	1	1	1	1
	C	3	2	2	3	3
	MI	1	3	1	3	3
	MF(M)Tr	1	1	1	1	1

	MF(H)MtR	1	1	2	3	2
	MF9M)Ct	1	1	2	3	1
Simba 7	MF(H)Ct	2	2	2	3	2
	MF(H)Tr	1	2	2	3	2
	С	3	2	2	3	2
	MI	2	2	2	3	2
	MF(M)Tr	2	2	2	3	2
	MF(H)MtR	1	2	2	3	1
	MF9M)Ct	2	2	2	3	2
Simba 8	MF(H)Ct	2	2	2	3	2
	MF(H)Tr	2	2	2	3	3
	С	3	2	2	3	2
	MI	2	2	2	3	1
	MF(M)Tr	1	1	1	3	1
	MF(H)MtR	2	2	2	3	2
	MF9M)Ct	2	2	2	2	2
Kathambi 1	MF(H)Ct	1	1	2	3	2
	MF(H)Tr	1	1	1	3	2
	С	3	1	2	2	3
	MI	1	1	1	1	2
	MF(M)Tr	1	1	2	3	2
	MF(H)MtR	1	2	2	3	1
	MF9M)Ct	2	1	1	3	1
2	MF(H)Ct	2	1	2	3	2
	MF(H)Tr	1	1	2	3	2
	С	3	2	3	2	3
	MI	1	1	1	1	2
	MF(M)Tr	2	2	2	2	2
	MF(H)MtR	1	2	2	2	1
	MF9M)Ct	2	1	2	3	2
3	MF(H)Ct	2	1	2	3	2
	MF(H)Tr	1	1	1	3	2
	С	3	2	3	2	3
	MI	1	2	1	1	2
	MF(M)Tr	2	2	1	3	2
	MF(H)MtR	1	2	2	2	1
	MF9M)Ct	2	1	2	3	2
4	MF(H)Ct	2	1	2	3	2
	MF(H)Tr	2	2	3	3	2
	С	2	2	3	2	3

		MI MF(M)Tr MF(H)MtR MF9M)Ct	3 2 1 2	2 2 2 2	1 2 2 2	2 2 3 3	3 3 1 2
	5	MF(H)Ct MF(H)Tr C MI MF(M)Tr MF(H)MtR MF9M)Ct	2 1 3 1 2 1 2	1 1 2 2 1 2 1	2 2 1 1 2 2 2	3 3 2 1 2 2 3	2 2 2 2 2 1 2
Lucy 1		MF(H)Ct MF(H)Tr C MI MF(M)Tr MF(H)MtR MF9M)Ct	2 1 3 2 2 1 3	2 1 2 2 2 2 2 2	2 1 3 2 2 2 3	1 3 1 3 2 1 1	2 1 3 2 1 2
Joseph 1		MF(H)Ct MF(H)Tr C MI MF(M)Tr MF(H)MtR MF9M)Ct	1 1 3 1 2 2 2	2 2 2 2 2 2 2 2 2	1 1 1 1 1 1 1	3 3 3 3 3 3 3 3	2 2 3 2 2 2 2 2
Ngoshi 1		MF(M)Tr MF(M)Ct MI MF(H)MtR MF(H)Ct MF(H)Tr C MF(M)Tr MF(M)Ct MI MF(H)MtR MF(H)Ct MF(H)Tr C	2 1 3 1 2 1 3 2 1 3 1 2 1 3	2 2 2 2 1 2 3 2 2 2 2 2 2 1 2 3	2 2 2 2 1 2 3 2 2 2 2 2 2 1 2 3	2 3 1 2 1 1 1 2 3 1 2 1 1 1 1	$     \begin{array}{c}       1 \\       1 \\       2 \\       2 \\       1 \\       1 \\       3 \\       1 \\       2 \\       2 \\       2 \\       1 \\       3 \\       3     \end{array} $
Ngoshi 2		MF(M)Tr MF(M)Ct	2 1	3 2	2 3	3 1	1 1

	MI	2	2	1	1	3
	MF(H)MtR	1	2	2	1	1
	MF(H)Ct	1	1	1	1	2
	MF(H)Tr	1	1	2	1	1
	C	3	2	3	2	3
	MF(M)Tr	2	3	2	3	1
	MF(M)Ct	1	2	3	1	1
	MI	2	2	1	1	3
	MF(H)MtR	1	2	2	1	1
	С	3	2	3	2	3
	MF(M)Ct	2	3	2	3	1
	MF(H)Tr	1	2	3	1	1
Ngoshi 3	MF(M)Tr	2	2	2	2	1
	MF(M)Ct	2	2	2	3	1
	MI	3	2	2	1	2
	MF(H)MtR	2	2	2	1	2
	MF(H)Ct	2	1	1	1	2
	MF(H)Tr	1	2	2	2	1
	С	3	3	3	1	3
	MF(M)Tr	2	2	2	2	1
	MF(M)Ct	2	2	2	3	1
	MI	3	2	2	1	2
	MF(H)MtR	2	2	2	1	2
	MF(M)Ct	2	1	1	1	2
	MF(H)Tr	1	2	2	2	1
	С	3	3	3	1	3
Ngoshi 4	MF(M)Tr	2	3	2	3	1
	MF(M)Ct	1	2	2	1	1
	MI	3	2	1	1	3
	MF(H)MtR	1	2	2	1	1
	MF(H)Ct	2	1	1	1	2
	MF(H)Tr	1	1	2	1	1
	С	3	2	3	1	3
	MF(M)Tr	2	3	2	3	1
	MF(M)Ct	1	2	2	1	1
	MI	3	2	1	1	3
	MF(H)MtR	1	2	2	1	1
	MF(H)Ct	2	1	1	1	2
	MF(H)Tr	1	1	2	1	1
	С	3	2	3	1	3
Ngoshi 5	MF(M)Tr	2	3	2	3	1
	MF(M)Ct	1	2	2	1	1
	MI	2	2	1	1	3

		MF(H)MtR	1	2	2	1	1
		MF(H)Cl	1	2 1	3	1	2 1
		MF(H) Ir	2	1	2	1	1
		C	3	2	3	3	3
		MF(M)Tr	2	3	2	3	l
		MF(M)Ct	1	2	2	l	l
		MI	2	2	1	1	3
		MF(H)MtR	1	2	2	1	1
		MF(H)Ct	1	2	3	1	2
		MF(H)Tr	2	1	2	1	1
		С	3	2	3	3	3
On Station		MF(L)Ct	2	2	3	1	2
Plot 1		MF(M)MtR	2	1	3	1	2
		MF(M)Tr	2	2	3	1	2
		MF(L)Tr	1	1	3	1	3
		MF(H)MtR	1	1	2	1	2
		MF(H)Ct	2	2	2	1	3
		MF(M)Ct	2	2	3	1	2
		С	3	1	3	1	3
		MF(H)Tr	2	2	3	1	3
		MF(L)MtR	2	1	2	1	3
		MI	2	2	3	1	3
	2	MF(L)Ct	2	2	3	1	2
		MF(M)MtR	1	1	3	1	1
		MF(M)Tr	2	2	3	1	2
		MF(L)Tr	2	2	3	1	2
		MF(H)MtR	1	1	3	1	1
		MF(H)Ct	1	2	3	1	2
		MF(M)Ct	2	2	2	1	2
		C	3	3	3	1	3
		C MF(H)Tr	1	2	3	1	2
		ME(I)MtP	1	1	1	1	2
		MI	2	1	1	1	2
			2	2	2	1	2
		WIIC	5	3	3	1	3
	3	MF(L)Ct	1	3	3	1	2
		MF(M)MtR	1	2	2	2	2
		MF(M)Tr	2	2	2	1	2
		MF(L)Tr	2	2	1	1	3
		MF(H)MtR	1	1	1	2	1
		MF(H)Ct	- 1	3	1	2	1
		MF(M)Ct	1	2	1	2	1
		C	3	23	3	- 1	3
		∼ MF(H)Tr	1	2	2	2	2
			1	4	4	4	4

	MF(L)MtR	2	2	2	1	2
	MI	2	2	2	2	2
	MIC	3	3	3	1	3
4	MF(L)Ct	2	2	2	1	2
	MF(M)MtR	2	2	2	1	2
	MF(M)Tr	2	2	2	1	2
	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	1	1	1	1	1
	MF(H)Ct	1	1	1	1	1
	MF(M)Ct	1	2	2	1	1
	С	3	3	3	1	3
	MF(H)Tr	1	2	2	1	1
	MF(L)MtR	2	3	1	1	2
	MI	2	2	2	2	2
	MIC	3	3	3	1	3
5	MF(L)Ct	2	2	2	1	2
	MF(M)MtR	1	1	1	1	1
	MF(M)Tr	1	1	1	1	1
	MF(L)Tr	2	2	1	1	1
	MF(H)MtR	2	2	1	1	1
	MF(H)Ct	1	1	1	1	1
	MF(M)Ct	1	1	2	1	2
	С	3	2	3	1	3
	MF(H)Tr	1	1	1	1	2
	MF(L)MtR	1	1	1	1	2
	MI	3	3	1	1	1
	MIC	3	3	3	1	3
6	MF(L)Ct	2	2	2	1	2
	MF(M)MtR	1	1	1	1	1
	MF(M)Tr	2	2	2	1	2
	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	1	1	1	1	1
	MF(H)Ct	2	2	2	1	2
	MF(M)Ct	1	1	1	1	1
	С	3	3	3	1	3
	MF(H)Tr	1	1	2	1	2
	MF(L)MtR	2	1	2	1	2
	MI	1	1	1	1	1
	MIC	3	3	3	1	3
7	MF(L)Ct	2	2	2	1	2
	MF(M)MtR	1	1	1	1	1
	MF(M)Tr	2	2	2	1	2

	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	1	1	1	1	1
	MF(H)Ct	2	2	2	1	2
	MF(M)Ct	1	1	1	1	1
	C	3	3	3	1	3
	€ MF(H)Tr	1	1	2	1	2
	ME(I)MtP	2	1	2	1	$\frac{2}{2}$
	MI	2	1	2 1	1	1
		1	1	1	1	1
	MIC	3	3	3	1	3
8	MF(L)Ct	2	2	3	1	2
-	MF(M)MtR	1	1	1	1	1
	MF(M)Tr	2	2	2	1	2
	MF(I)Tr	2	2	2	1	$\frac{2}{2}$
	ME(H)MtD	1	2 1	2 1	1	2 1
	ME(II)MIK	1	1	1	1	1
		1	2	2	1	2
	MF(M)Ct	2	2	2	1	2
	C	3	3	2	1	3
	MF(H)Tr	l	2	l	l	2
	MF(L)MtR	2	2	1	1	2
	MI	2	3	2	1	2
	MIC	3	3	2	1	3
9	MF(L)Ct	1	2	3	1	2
,	MF(M)MtR	1	$\frac{2}{2}$	2	1	$\frac{2}{2}$
	MF(M)Tr	1	$\frac{2}{2}$	2	1	2
	$ME(I)T_r$	ے 1	2	1	1	2
	MF(L)II ME(II)M+D	1	2	1	1	) 1
		1	2 1	1	1	1
	MF(H)Ct	1	1	1	1	3
	MF(M)Ct	1	1	1	1	3
	C	3	3	2	l	3
	MF(H)Tr	1	2	1	1	2
	MF(L)MtR	2	2	2	1	2
	MI	1	2	2	1	1
	MIC	3	3	2	1	3
10	MF(L)Ct	2	2	3	1	2.
10	MF(M)MtR	- 1	1	1	1	1
	MF(M)Tr	2	2	2	1	2
	ME(I)Tr	2	$\frac{2}{2}$	2	1	$\frac{2}{2}$
	ME(H)M+D	∠ 1	∠ 1	2 1	1	∠ 1
		1	1 2	1	1	1 2
		1	2	2	1	2
	MF(M)Ct	2	2	2	1	2
		3	5	2	1	3
	MF(H)Tr	1	2	l	l	2
	MF(L)MtR	2	2	1	1	2

	MI	2	3	2	1	2
	MIC	3	3	2	1	3
11	MF(L)Ct	2	2	1	1	1
	MF(M)MtR	2	1	2	3	1
	MF(M)Tr	2	2	2	1	1
	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	1	1	1	1	1
	MF(H)Ct	1	2	1	1	1
	MF(M)Ct	2	2	1	1	1
	C	3	3	2	1	3
	MF(H)Tr	2	3	2	1	2
	MF(L)MtR	2	2	2	1	2
	MI	2	2	$\frac{2}{2}$	1	2
	MIC	2	2	2	1	2
	wite	5	5	2	1	5
12	MF(L)Ct	2	2	2	1	2
	MF(M)MtR	2	2	2	- 1	2
	MF(M)Tr	2	2	2	1	2
	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	2	2	$\frac{2}{2}$	1	2
	MF(H)Ct	$\frac{2}{2}$	2	2	1	$\frac{2}{2}$
	MF(M)Ct	$\frac{2}{2}$	$\frac{2}{2}$	$\frac{2}{2}$	1	2
	C C	2	2	2	1	2
	C ME(U)Tr	3 2	3 2	2	1	3 2
	$MF(\Pi)\Pi$	2	2	2	1	2
	MF(L)MIR	2	2	2	1	2
		2	2	2	1	2
	MIC	3	3	3	1	3
13	MF(L)Ct	2	2	1	1	1
15	MF(M)MtR	2	1	2	3	1
	MF(M)Tr	$\frac{2}{2}$	2	2	1	1
	MF(I)Tr	2	2	2	1	2
	MF(H)MtP	1	1	1	1	2 1
	MF(H)Ct	1	1	1	1	1
	MF(II)Ct	1	2	1	1	1
	MF(M)Ct	2	2	1	1	1
		2 2	2	2	1	2
		2	2	2	1	2
	MF(L)MtR	2	2	2	1	2
	MI	2	2	2	1	2
	MIC	3	3	2	1	3
14	MF(L)Ct	2	3	1	1	2
14		ے 1	5 1	1	1	ے 1
		1 2	1 2	1 2	1	1 2
	ME(I)T.	2			1	
		Ĺ	Z	L	1	L

	MF(H)MtR	1	1	1	1	1
	MF(H)Ct	2	3	2	1	2
	MF(M)Ct	2	2	2	1	2
	C	3	3	2	1	3
	MF(H)Tr	2	2	2	1	2
	MF(L)MtR	2	1	2	1	2
	MI	- 1	2	2	1	2
	MIC	3	3	2	1	3
	MIC	5	5	2	1	5
15	MF(L)Ct	2	2	1	1	1
	MF(M)MtR	2	1	2	3	1
	MF(M)Tr	2	2	2	1	1
	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	- 1	- 1	- 1	1	1
	MF(H)Ct	1	2	1	1	1
	MF(M)Ct	2	2	1	1	1
	C	3	3	2	1	3
	MF(H)Tr	2	3	2	1	2
	MF(L)MtR	2	2	2	1	2
	MI	2	2	2	1	2
	MIC	3	3	2	1	3
	e	5	5	-	-	U
16	MF(L)Ct	2	2	2	1	2
	MF(M)MtR	1	1	2	1	1
	MF(M)Tr	2	1	2	1	2
	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	1	1	1	1	2
	MF(H)Ct	1	1	2	1	1
	MF(M)Ct	1	1	3	1	2
	C	3	2	3	1	3
	MF(H)Tr	2	2	2	1	2
	MF(L)MtR	1	2	2	1	2
	MI	2	2	2	1	2
	MIC	3	3	2	1	3
	_	_	-			_
17	MF(L)Ct	2	2	2	2	2
	MF(M)MtR	2	2	2	2	2
	MF(M)Tr	2	2	2	2	2
	MF(L)Tr	2	2	2	2	2
	MF(H)MtR	1	1	1	3	1
	MF(H)Ct	1	- 1	-	2	1
	MF(M)Ct	1	1	1	2	2
	C	3	2	3	-	3
	- MF(H)Tr	2	- 2	2	2	2
	MF(L)MtR	2	2	- 1	2	2
	MI	$\frac{2}{2}$	2	1	$\frac{2}{2}$	- 1
	1711		-	1	-	1

	MIC	3	2	3	1	3
18	MF(L)Ct MF(M)MtR MF(M)Tr MF(L)Tr MF(H)MtR MF(H)Ct C MF(M)Ct C MF(H)Tr MF(L)MtR MI MIC	2 1 2 1 1 1 3 2 1 2 3	2 1 1 2 1 1 1 2 2 2 2 2 3	2 2 2 2 1 2 3 3 2 2 2 2 2	1 1 1 1 1 1 1 1 1 1 1 1	2 1 2 2 1 2 3 2 2 2 3
19	MF(L)Ct MF(M)MtR MF(M)Tr MF(L)Tr MF(H)MtR MF(H)Ct C MF(M)Ct C MF(H)Tr MF(L)MtR MI MIC	2 2 2 2 2 2 2 2 2 2 3 2 2 2 3	1 2 2 2 2 2 2 2 2 3 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 3 2 2 2 2 2	1 2 2 2 2 2 2 1 1 1 2 3	2 2 2 2 2 2 2 2 2 2 2 3 2 3 2 3 2 3
20	MF(L)Ct MF(M)MtR MF(M)Tr MF(L)Tr MF(H)MtR MF(H)Ct MF(M)Ct C MF(H)Tr MF(L)MtR MI MIC	1 2 3 1 1 2 3 2 3 2 3 2 3	2 3 2 2 3 2 3 2 3 2 3 3	3 1 2 3 3 2 2 2 2 2 2 1 3	2 2 1 1 1 1 3 2 2 1 2	1 1 2 1 3 3 3 3 2 2 3 3
21	MF(L)Ct MF(M)MtR MF(M)Tr MF(L)Tr MF(H)MtR	2 1 2 2 1	2 1 1 2 1	2 2 2 2 1	1 1 1 1	2 1 2 2 2

	MF(H)Ct	1	1	2	1	1
	MF(M)Ct	1	1	3	1	2
	С	3	2	3	1	3
	MF(H)Tr	2	2	2	1	2
	MF(L)MtR	1	2	2	1	2
	MI	2	2	2	1	2
	MIC	3	3	2	1	3
22	MF(L)Ct	2	2	2	1	2
	MF(M)MtR	1	1	2	1	1
	MF(M)Tr	2	1	2	1	2
	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	1	1	1	1	2
	MF(H)Ct	1	1	2	1	1
	MF(M)Ct	1	1	3	1	2
	С	3	2	3	1	3
	MF(H)Tr	2	2	2	1	2
	MF(L)MtR	1	2	2	1	2
	MI	2	2	2	1	2
	MIC	3	3	2	1	3
23	MF(L)Ct	1	1	2	2	2
	MF(M)MtR	2	1	1	2	2
	MF(M)Tr	2	2	2	1	2
	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	1	1	2	2	1
	MF(H)Ct	1	1	2	1	2
	MF(M)Ct	2	2	2	1	2
	С	3	3	3	3	3
	MF(H)Tr	2	2	2	2	2
	MF(L)MtR	2	2	2	2	2
	MI	2	2	2	2	2
	MIC	3	3	3	2	3
24	MF(L)Ct	2	2	2	1	2
27	MF(M)MtP	1	1	2	1	1
	MF(M)Tr	1	1	2	1	1
	MF(M)Tr	2	1	2	1	2
	ME(L) M + D	ے 1	ے 1	ے 1	1	2
		1	1	1	1	2 1
		1	1	2	1	1
		1	1	3 2	1	2 2
		3	2	3	1	3
	MF(H)If	<u>_</u>	2	2	1	2
	MF(L)MtK	1	2	2	1	2
	MI	2	2	2	1	2
	MIC	3	3	2	1	3

25	MF(L)Ct	1	1	1	1	1
	MF(M)MtR	1	1	1	3	1
	MF(M)Tr	1	1	1	1	1
	MF(L)Tr	2	2	2	2	2
	MF(H)MtR	1	1	1	1	1
	MF(H)Ct	1	1	1	1	1
	MF(M)Ct	1	1	1	1	1
	C	3	3	2	1	3
	MF(H)Tr	1	1	- 1	1	2
	MF(L)MtR	1	1	1	1	2
	MI	2	2	1	1	1
	MIC	23	1	2	1	3
	WIIC	5	1	2	1	5
26	MF(L)Ct	2	2	2	1	2
	MF(M)MtR	1	1	2	1	1
	MF(M)Tr	2	1	2	1	2
	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	1	1	1	1	2
	MF(H)Ct	1	1	2	1	1
	MF(M)Ct	1	1	3	1	2
	C	3	2	3	1	3
	MF(H)Tr	2	2	2	1	2
	MF(L)MtR	1	2	2	1	2
	MI	2	2	2	1	2
	MIC	3	3	2	1	3
	-	-	-			_
27	MF(L)Ct	1	1	2	2	2
	MF(M)MtR	2	1	1	2	2
	MF(M)Tr	2	2	2	1	2
	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	1	1	2	2	1
	MF(H)Ct	1	1	2	1	2
	MF(M)Ct	2	2	2	1	2
	C	3	3	3	3	3
	MF(H)Tr	2	2	2	2	2
	MF(L)MtR	2	2	2	2	2
	MI	2	2	2	2	2
	MIC	3	3	3	2	3
•				-		-
28	MF(L)Ct	1	1	2	1	2
	MF(M)MtR	1	1	1	1	1
	MF(M)Tr	1	1	1	1	2
	MF(L)Tr	2	1	1	1	1
	MF(H)MtR	1	1	1	1	1
	MF(H)Ct	1	1	1	1	1

	MF(M)Ct	1	1	1	1	1
	С	3	1	2	1	3
	MF(H)Tr	1	1	2	1	1
	MF(L)MtR	1	1	2	1	1
	MI	1	2	2	1	1
	MIC	3	1	2	1	3
		-				-
29	MF(L)Ct	1	1	2	1	2
	MF(M)MtR	1	1	1	1	1
	MF(M)Tr	1	1	1	1	2
	MF(L)Tr	2	1	1	1	1
	MF(H)MtR	1	1	1	1	1
	MF(H)Ct	1	1	1	1	1
	MF(M)Ct	1	1	1	1	1
	С	3	1	2	1	3
	MF(H)Tr	1	1	2	1	1
	MF(L)MtR	1	1	2	1	1
	MI	1	2	2	1	1
	MIC	3	1	2	1	3
30	MF(L)Ct	1	1	2	1	2
	MF(M)MtR	1	1	1	1	1
	MF(M)Tr	1	1	1	2	1
	MF(L)Tr	2	2	2	1	3
	MF(H)MtR	1	1	1	3	1
	MF(H)Ct	1	2	1	2	2
	MF(M)Ct	2	2	2	2	2
	С	3	3	3	1	3
	MF(H)Tr	2	2	2	2	2
	MF(L)MtR	2	2	2	2	2
	MI	2	2	2	2	2
	MIC	3	3	3	1	3
21		1	2	1	1	C
51	MF(L)Cl $ME(M)MtD$	1	ے 1	1	1	2
	$ME(M)T_{\pi}$	2	1	1	1	2
	MF(M) Tr	2	2	2	2	2
	MF(L) H	ے 1	ے 1	ے 1	ے 1	ے 1
	MF(H)MIK	1	1	1	1	1
	MF(H)Cl	1	1	1	1	1
		1	1		1	
	U ME(INT.	3	3	3 1		3
	MF(H)1f	2	2	1	2	2
	MF(L)MtK	2	2	2	2	2
	MI	2	2		2	2
	MIC	3	3	3	1	3

32	MF(L)Ct MF(M)MtR MF(M)Tr MF(L)Tr MF(H)MtR MF(H)Ct C MF(M)Ct C MF(H)Tr MF(L)MtR MI MIC	1 2 2 1 1 2 3 2 2 2 2 3	1 1 2 1 1 2 3 2 2 2 3	2 1 2 2 2 2 2 2 3 2 2 3 3	2 2 1 1 2 1 1 3 2 2 2 2 2 2	2 2 2 2 1 2 2 3 2 2 3 3
33	MF(L)Ct MF(M)MtR MF(M)Tr MF(L)Tr MF(H)MtR MF(H)Ct C MF(M)Ct C MF(H)Tr MF(L)MtR MI MIC	$     \begin{array}{c}       1 \\       1 \\       2 \\       1 \\       1 \\       1 \\       3 \\       1 \\       1 \\       1 \\       3 \\       1 \\       1 \\       3 \\       3 \\       1 \\       1 \\       3 \\       1 \\       3 \\       1 \\       3 \\       1 \\       3 \\       1 \\       3 \\       1 \\       3 \\       1 \\       3 \\       1 \\       1 \\       3 \\       1 \\       3 \\       1 \\       1 \\       3 \\       1 \\       1 \\       3 \\       1 \\       1 \\       3 \\       1 \\       3 \\       3 \\       1 \\       3 \\       3 \\       3 \\       1 \\       3 \\       3 \\       3 \\       3 \\       3 \\       1 \\       3 \\     $	$     \begin{array}{c}       1 \\       1 \\       1 \\       1 \\       1 \\       1 \\       1 \\       1 \\       1 \\       1 \\       2 \\       1     \end{array} $	2 1 1 2 1 1 1 2 2 2 2 2 2 2	$     1 \\     1 \\     1 \\     2 \\     1 \\    $	2 1 2 1 1 1 1 3 1 1 1 3
34	MF(L)Ct MF(M)MtR MF(M)Tr MF(L)Tr MF(H)MtR MF(H)Ct C MF(M)Ct C MF(H)Tr MF(L)MtR MI MIC	2 1 2 1 2 1 3 2 2 1 3	3 2 2 2 1 3 2 2 2 1 3 2	2 2 2 1 3 1 3 1 1 2 3	$     \begin{array}{c}       2 \\       1 \\       1 \\       1 \\       2 \\       1 \\       1 \\       2 \\       1 \\       1 \\       3 \\       \end{array} $	2 2 2 2 1 2 2 3 1 2 3 1 2 1 3
35	MF(L)Ct MF(M)MtR MF(M)Tr MF(L)Tr MF(H)MtR MF(H)Ct MF(M)Ct	2 1 2 2 1 1 1 1	2 1 1 2 1 1 1	2 2 1 2 1 1 1	1 1 1 1 1 1 1	2 2 2 1 1 1

	С	3	2	3	1	3
	MF(H)Tr	1	1	1	1	2
	MF(L)MtR	1	1	1	1	2
	MI	1	2	1	1	2
	MIC	3	1	3	1	3
36	MF(L)Ct	2	2	2	2	2
	MF(M)MtR	1	1	1	1	1
	MF(M)Tr	1	1	2	2	2
	MF(L)Tr	2	2	2	1	2
	MF(H)MtR	1	1	1	1	1
	MF(H)Ct	1	1	2	1	1
	MF(M)Ct	1	1	1	1	1
	C	3	2	3	3	3
	MF(H)Tr	1	1	2	2	1
	MF(L)MtR	1	1	2	1	1
	MI	2	2	1	1	1
	MIC	3	2	3		3
37	MF(L)Ct	1	1	2	1	2
	MF(M)MtR	1	1	2	1	1
	MF(M)Tr	1	1	2	1	2
	MF(L)Tr	2	1	2	1	2
	MF(H)MtR	1	1	2	1	1
	MF(H)Ct	1	1	2	1	1
	MF(M)Ct	1	1	2	1	1
	C	3	2	2	1	3
	MF(H)Tr	1	1	2	1	1
	MF(L)MtR	1	1	2	1	2
	MI	1	2	2	1	1
	MIC	3	1	3	1	3
38	MF(L)Ct	1	2	2	1	2
	MF(M)MtR	1	1	1	1	1
	MF(M)Tr	2	2	2	1	2
	MF(L)Tr	2	1	2	1	2
	MF(H)MtR	1	1	1	1	1
	MF(H)Ct	1	1	1	1	1
	MF(M)Ct	1	1	2	1	2
	C	3	2	1	1	3
	MF(H)Tr	1	1	2	1	1
	MF(L)MtR	- 1	1	2	1	2
	MI	$\frac{1}{2}$	2	1	1	1
	MIC	- 3	3	3	- 1	3
		-	-	-		-