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Transforming Awareness of the Importance of Sustainability through Joint Action

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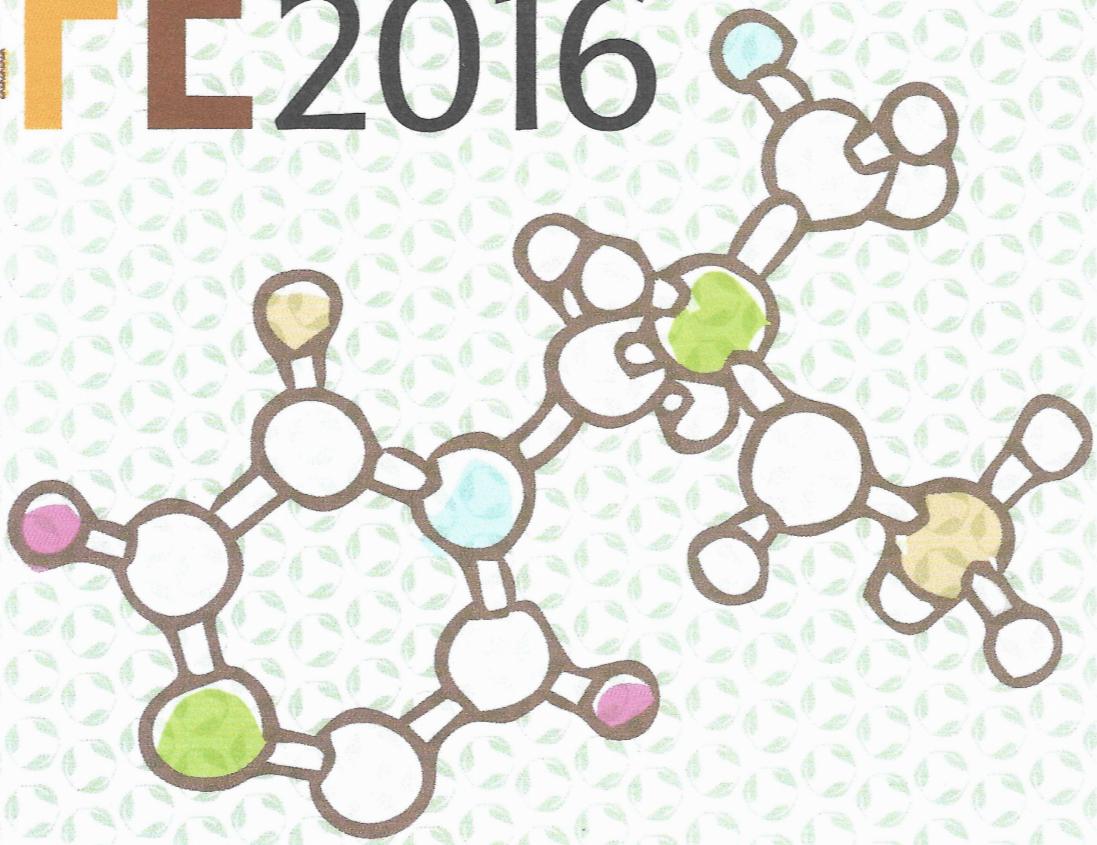
Conference Programme
Papers Abstracts

Transforming Awareness of the Importance of Sustainability through Joint Action

SAFE 2016



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SAT-56	**Hermansah[1], Ermadani[2], Yulnafatmawita[1], Auzar Syarif[3], Bujang Rusman[1]** 1 Department of Soil Science, Faculty of Agriculture, Andalas University, Padang, Indonesia hermankarani@yahoo.com 2Graduate Program of Agriculture Sciences, Andalas University, Padang , Indonesia. E-mail:ermadani_unja@yahoo.com 3Department of Agronomy, Faculty of Agriculture, Andalas University, Padang, Indonesia	INDONESIA	Optimizing The Utilization Of Palm Oil Mill Effluent And Its Influences On Nutrient Availability And Soil Organic Carbon On Ultisols
SAT-57	**I Gusti Made Arjana[#], Yohanes Parlindungan Situmeang[#]** [#]Faculty of Agriculture, Warmadewa University, Jalan Terompong 24 Tanjung Bungkak, Denpasar, Bali, 80235, Indonesia E-mail: igmarjana@gmail.com, E-mail: ypsitumeang63@gmail.com	INDONESIA	Study Setting Artificial Irradiation on Growth and Yield of Four Varieties of Chrysanthemum
SAT-58	**I Dewa Nyoman Sudita, I Nyoman Kaca, Luh Suariani, and Ni Made Yudiastari** Animal Husbandry Departement, Fakulty of Agriculture Warmadewa University-Denpasar,Bali. INDONESIA E-mail: dewasudita@yahoo.com	INDONESIA	Response Growth, Production, And Qualitypennisetum Purpureum C.V. Mott Are Given Fertilization Urea, Bio-Urine And Combinations
SAT-59	**Dwi Rustam Kendarto[#], Sophia Dwiratna NP.[*], Third Author[#]** [#] Soil and Water Engineering Laboratory, Agricultural Engineering, Faculty of Agriculture Industrial Technology, Padjadjaran University, Jl. Bandung Sumedang km 21 Jatinangor, Sumedang, West Java, Indonesia E-mail: dwirustamkendarto@gmail.com * Soil and Water Engineering Laboratory, Agricultural Engineering, Faculty of Agriculture Industrial Technology, Padjadjaran University, Jl. Bandung Sumedang km 21 Jatinangor, Sumedang, West Java, IndonesiaSecond Institution	INDONESIA	Effectiveness Of The Use Of Earthenware Filters With Addition Of Silver Nitrate Solution To Reduce The Content *Escherichia Coli*
SAT-60	**Edwin[a], Amrizal Saidi[b], Aprisal[c], Yulnafatmawita[c]** [a] Students Doctoral Program of the Graduate University of Andalas, Padang, 25163, Indonesia Agroecotechnology Department, Faculty of Agriculture, University of Andalas, Campus III Dharmasraya, Pulau Punjung, 27573, Indonesia E-mail: edwin@faperta.unand.ac.id E-mail: edwinanas@gmail.com [b]Soil Department, Faculty of Agriculture, University of Andalas, Padang, 25163, Indonesia E-mail : amrizal.saidi@gmail.com [c]Soil Department, Faculty of Agriculture, University of Andalas, Padang, 25163, Indonesia E-mail : aprisadunand@yahoo.co.id [d]Soil Department, Faculty of Agriculture, University of Andalas, Padang, 25163, Indonesia E-mail : yulna_fatmawita@yahoo.com	INDONESIA	Evaluation Of Physical Suitability Land For Agriculture On Sub Watershed Sumpur Singkarak
SAT-61	**Zainal Muktamar[1], Sigit Sudjatmiko[2], Muhammad Chozin[3], Nanik Setyowati[4] and Fahrurrozi[5]** [1]Soil Science Department, University of Bengkulu, Bengkulu 38371, Indonesia E-mail: muktamar1959@yahoo.com [2]Agronomy Department, University of Bengkulu, Bengkulu 38371, Indonesia.E-mail: siglt_s@yahoo.com [3]Agronomy Department, University of Bengkulu, Bengkulu 38371, Indonesia.E-mail: m_chozin@hotmail.com [4]Agronomy Department, University of Bengkulu, Bengkulu 38371, Indonesia.E-mail: nanik_srg@yahoo.com [5]Agronomy Department, University of Bengkulu, Bengkulu 38371, Indonesia.E-mail: rozi38125@yahoo.com	INDONESIA	Sweet Corn Performance And Its Major Nutrient Uptake Following Application Of Vermicompost Supplemented With Liquid Organic Fertilizer
SAT-62	**Reny Herawati[*1], Rustikawati[2], Entang Inoriyah[3]** Department of Agronomy, Bengkulu University, WR Supratman Street, Bengkulu, 38371A, Indonesia E-mail: reny.herawati70@gmail.com	INDONESIA	Genetics Diversity And Agronomic Characters Of F3 Lines Selected Using Recurrent Selection To Developed Drought Tolerance And Blast Desease Resistance Derived Bengkulu Local Rice Varieties

SAT-62

GENETICS DIVERSITY AND AGRONOMIC CHARACTERS OF F3 LINES SELECTED USING RECURRENT SELECTION TO DEVELOPED DROUGHT TOLERANCE AND BLAST DESEASE RESISTANCE DERIVED BENGKULU LOCAL RICE VARIETIES

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Abstract—**Recurrent selection (RS) has applied in local Bengkulu rice varieties to developed drough tolerance and blast desease resistance lines. RS is a methode selection and crossing plant selected from sistematic population to develope new superior population. RS had been used since 2004, in new plant type development. From this methode by the crossing in selected populations produced 12 number combination. In the next season, as many as 12 numbers are planted in bulk, and produced 180 number of lines ready to be examined further. Selection and characteristics was represented by plant height, number of tillers, flowering and maturity, length of panicle, number of filled grains per panicle, number of unfilled grains, and weight of grains per hill. The result showed that there were broad variation in the agronomic characters of F3 RS lines. There is an increase in the average values of number of grains fill/panicle, fertility in population of F2 RS compared with its constituent of parents. Selection of characters plant height, number of tillers, number of grains fill per panicle, and weight of grains per hill will be effective in early generations because it has a high heritability value and broad genetic diversity.**

Keywords—**Recurrent selection, genetic diversity, F3 RS Line, local varieties**

SAT-63

Effect of Giberelin and Sitokinin on growth of the index is the harvest and the quality of the fruit Corn (Zea mayz)

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Abstract—**Gibberellin application to overcome the low harvest index of Corn (Zea mayz.) at corn plantation Taliabu Island of North Maluku Community. Cytokinin is known to promote the allocation of assimilates to sink organs. This research was aimed to evaluate the effect of gibberellin and cytokinin on growth, harvest index, and fruit quality of corn. Factorial Randomized Complete Block Design (RCBD) was used in this experiment. First factor applied was gibberellin levels (0, 50, 100 ppm) while the second factor applied was cytokinin levels (0, 14, 20 ppm), for each treatment combination 50 replicates were used and the experiment was repeated 2 times. Gibberelin and cytokinin were applied in the 1th and 2th months on vegetative plants and in the 2th and 4th weeks on fruiting plants. Plant vegetative growth observation was carried out at 3th month. Harvest index and fruit quality analysis were determined in the 100th day after flowering. The results showed that applying gibberellin increased D-leaf length, D-leaf area, and crown length. Harvest index increased slightly following application of 100 ppm of gibberellins but this treatment slightly delayed fruit ripening (±5 days). Water content and potassium content of corn were improved by application of 24 ppm of cytokinin. Compared to the control groups, application of 48 ppm of cytokinin increased chlorophyll content and plant fresh weight to 54,6% and 15,3% respectively but total soluble solid (TSS) decreased to 9,50%. Application of 100 ppm of gibberellin and 24 ppm of cytokinin increased fruit fiber content and crown potassium, vitamin C content but decreased the sucrose/hexose ratio in corn fruit.**

Keywords— **Corn (Zea mayz) gibberellin, cytokinin, harvest index, fruit quality**

GENETICS DIVERSITY AND AGRONOMIC CHARACTERS OF F3 LINES SELECTED BY RECURRENT SELECTION FOR DROUGHT TOLERANCE AND BLAST RESISTANCE OF BENGKULU LOCAL RICE VARIETIES

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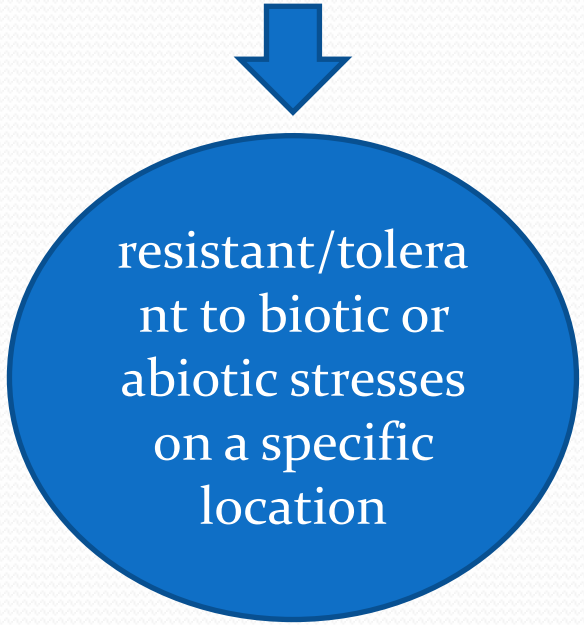
INTRODUCTION

Local varieties had been used in the breeding program to improve genetic potensial.



Use of local varieties as parental hybridization is recommended, to get superior specific genotype on the new varieties, so that released varieties should have a broad genetic variability

INTRODUCTION

Recurrent selection (RS) is a method of selection by crossing selected plants from sistematic population to develop new superior population.

This methode is powerful procedure to accumulate desirable genes from crossing recombination between continous selected segregants to get the best new population.

This methode has been done and succed in breeding some crops (Rangel *et al*, 2002; Abdullah *et al*, 2008; Niu *et al*, 2010; Silva *et al*, 2010; Morais *et al*, 2015).

This research aims to study genetic diversity and agronomic characther of F3 lines population using RS methode to make the selection of the population in the next generation.

MATERIAL AND METHOD

- **SRIWIJAYA** → **LOCAL VARIETIES**
- **BUGIS** → **(RESISTANCE TO BLAST)**
- **IR7858-1** → **IRRI Introduction Lines (Drough tolerant)**
- **IR48**

MATERIAL AND METHOD

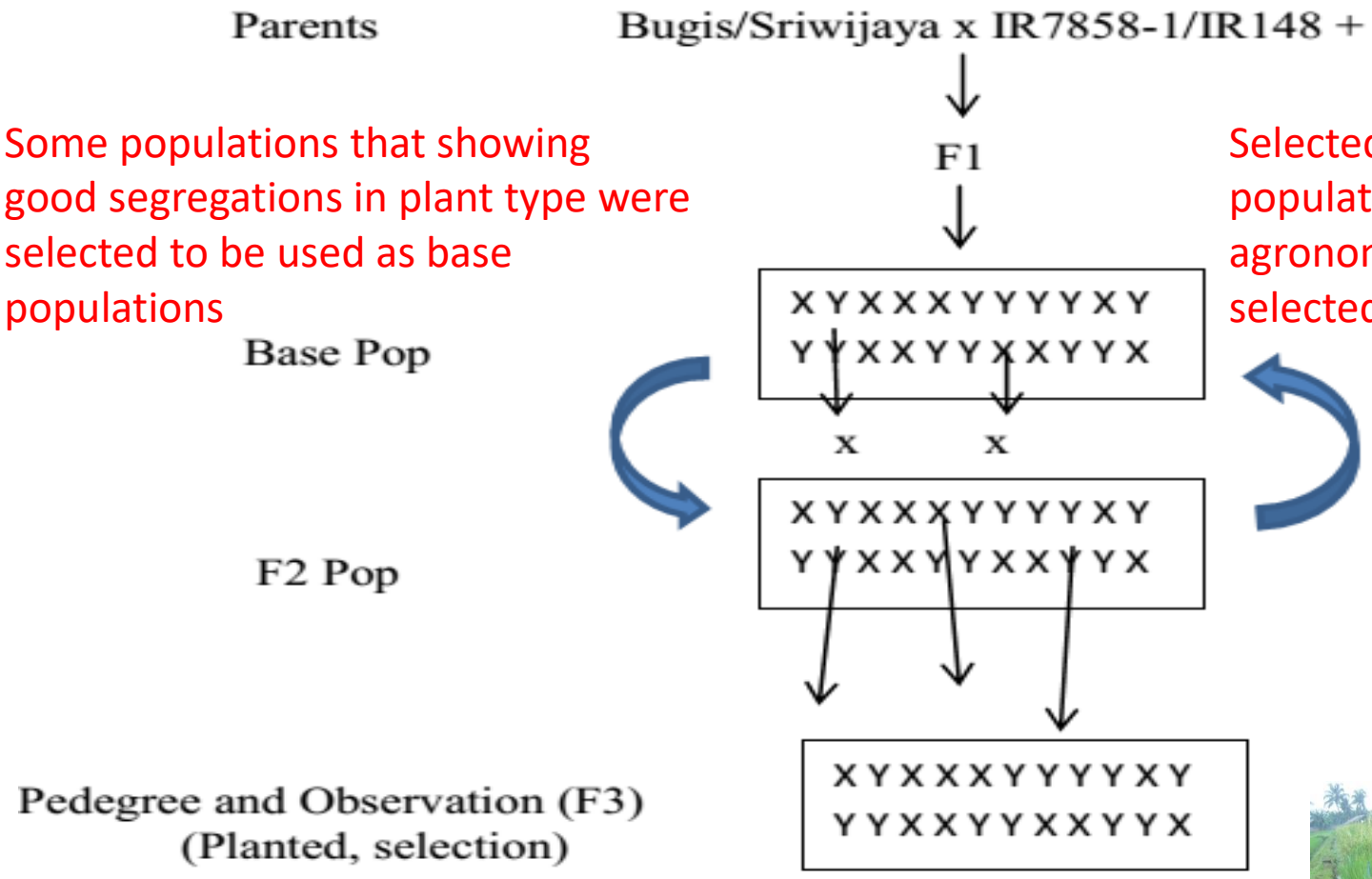


Figure 1. Recurrent Selection

Some populations that showing good segregations in plant type were selected to be used as base populations

Selected plants among the populations that having good agronomic characters were selected crossed to each other

Observed based on plant vigor, plant height, number of tillers, flowering and maturity, length of panicle, number of filled grains per panicle, number of unfilled grains, and weight of grains per hill.

RESULT AND DISCUSSION

Analysis of variansces and genetic variability of agronomical characters of rice line population derived Sriwijaya, Bugis, IR7858-1, and IR148

Characters	MS	F value	GV	PV	2xSDGV	GVC (%)	PVC (%)	h^2bs
Flowering (dap)	968.72	125.2**	48.05	55.79	35.37	0.08	0.08	0.86
Maturity (dap)	1259.52	26.2**	60.57	108.74	45.99	0.06	0.08	0.56
Plant Height (cm)	5885.19	64.6**	289.7	380.81	214.9	0.15	0.17	0.76
Number of productive tiller	227.23	13.8**	10.54	27.05	8.3	0.29	0.47	0.39
Penicle length (cm)	2474.78	200.6**	123.12	135.46	90.37	0.73	0.76	0.91
Number of filled grains/panicle	50583	1254.6**	2527.1	2567.45	1847.03	1.31	1.32	0.98
Number of unfilled grains/panicle	1629.44	97.3**	80.63	97.38	59.5	0.66	0.72	0.83
Grain weight /hill (g)	1821.88	136.68**	90.43	103.76	66.53	0.66	0.71	0.87

- Results showed that there were significant differences in all the characters are observed
- The coefficient of genotypic diversity (GVC) and phenotype (PVC) for the character panicle length, number of filled grain/ panicle, the number of unfill grains/panicle and grain weight/hill between broad to very broad, and has a high heritability value between 0.83-0.91
- characters of plant height, flowering and maturity, panicle length, number of fill grains per panicle and grain weight/hill in this study has high heritability (h2bs). It's mean that the characters indicate genetic factors contribute greater than environmental factors, so that the selection of these characters begin in early generations.

Agronomical characters of F3 recurrent selection from parent of Sriwijaya, Bugis, IR7858-1, AND IR148

Characters	X± SD*	Range of the population**				Means Square***			
		Bugis/IR7878-1	Bugis/IR148	Sriwijaya/IR148	Sriwijaya/IR7858-1	Sriwijaya	Bugis	IR7858-1	IR148
Flowering (dap)	89.5±3.9	83-110	80-94	85-95	85-95	82	98	84	91
Maturity (dap)	119.5±4.1	112-140	109-124	114-126	115-125	112	128	114	120
Plant Height (cm)	126.9±13.7	104-155	94-160	103-140	91-128	107	160	114	111
Number of productive tiller	8.28±3.9	2.0-21.0	1.0-17.0	2.0-28.0	3.0-20.0	15	6	14	12
Penicle length (cm)	21.9±1.3	19.9-27.2	19.7-24.1	18.2-22.8	20.0-23.1	19	24	21	20
Number of filled grains per panicle	68.1±8.7	51.7-96.7	23.3-75.3	56.7-78.7	57.3-81.7	65	129	79	81
Number of unfilled grains per panicle	18.9±4.7	10.7-40.7	11.3-30.3	9.3-23.3	11.7-21.7	17	29	19	15
Grain weight per hill (g)	19.4±2.4	15.3-24.7	15.1-23.5	13.9-23.1	15.3-22.6	13,5	24	19	20

- There was a diversity of agronomic characters in all character observed.
- Plant height populations derived from Bugis/IR7858-1 and Bugis / IR148 were very tall (>131cm), as same as Sriwijya/IR148 ranges from 103-140 cm. Plant height derived Bugis/IR7858-1 taller than elders character.
- Elders Sriwijaya had moderate plant height criteria, and elders Bugis had a very tall
- Elders IR7858-1 and IR148 had criteria between moderate to tall, indicating that the two parents is not stable and there is still segregation between populations

Grouping of the F3 RS population base on number plant height

Population	Grouping of plant height				
	short (<90cm)	moderate (91-110 cm)	tall (111-130 cm)	very tall (>131cm)	Total
Bugis/IR7858-1	0	6	38	106	150
Bugis/IR148	0	4	38	98	140
Sriwijaya/IR148	0	24	117	6	147
Sriwijaya/IR7858-1	0	36	71	0	107
Sriwijya	0	20	0	0	20
Bugis	0	0	0	20	20
IR7858-1	0	2	18	0	20
IR148	0	19	1	0	20
Note: Base on IRRI (1996)					

Frequency of distribution of the F3 population lead to be moderate to very tall criteria

Grouping of the F3 RS population base on number of tillers

Population	Grouping of number of tillers				
	very low (<5)	Low (5-9)	moderate (10-19)	high (>19)	Total
Bugis/IR7858-1	28	62	59	1	150
Bugis/IR148	52	72	16	0	140
Sriwijaya/IR148	10	68	68	1	147
Sriwijaya/IR7858-1	5	45	56	1	107
Sriwijya	0	0	20	0	20
Bugis	0	20	0	0	20
IR7858-1	0	0	20	0	20
IR148	0	0	20	0	20
Note: Base on IRRI (1996)					

- Population of lines derived Bugis/IR7858-1 more dominant being low to moderate
- Sriwijya/IR148 and Sriwijya/IR7858-1 more dominant in low to moderate productivity lines .
- The frequency distribution of the parental population tend to be low to moderate productivity lines

GROUPING OF THE F3 RS POPULATION BASE ON NUMBER OF MATURITY

Population	Grouping of maturity				
	earlier (<115 dap)	medium (115-125 dap)	late (126-150 dap)	extremely late (>151 dap)	Total
Bugis/IR7858-1	8	108	34	0	150
Bugis/IR148	23	117	0	0	140
Sriwijaya/IR148	2	144	1	0	147
Sriwijaya/IR7858-1	0	107	0	0	107
Sriwijya	20	0	0	0	20
Bugis	0	0	20	0	20
IR7858-1	18	2	0	0	20
IR148	2	18	0	0	20

- Maturity in genotipe result of all crosses more dominant in the medium lines (115-125 days after planting),
- The frequency distribution of the parental Sriwijaya more directed at early maturity group
- Bugis parental is more directed at the late age groups.
- IR148 and IR7858-1 parental more lead to be the early maturity group to medium. This shows that the two parents still segregating

CONCLUSIONS

- There were diversity of characters among population F3 lines using Recurrent selection method

- The potential for agronomic characters had produced some selected lines. There was an increase in the value of the average number of filled grains/panicle and grain fertility compared with its constituent elders.

- Selection based on plant height, number of productive tiller, number of grains per panicle, number of filled grain per panicle and grain weight/hill will be effective in early generations because it had high heritability values and broad genetic diversities.

- Further evaluation of F4 lines should be arranged on the spesific environment in order to obtain superior lines as previously inteded.

THANK YOU