

**SFRN** 2019

# PROCEEDING

Security in  
food,  
renewable  
resources,  
and  
natural  
medicines



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**3rd INTERNATIONAL CONFER-  
ENCE ON SECURITY IN FOOD,  
RENEWABLE RESOURCES, AND  
NATURAL MEDICINES 2019  
(SFRN 2019)**

Convention Hall Politeknik Pertanian Negeri Payakumbuh  
INDONESIA



hosted by,  
Politeknik Pertanian  
Negeri Payakumbuh



co-Hosted by,  
Universitas Andalas  
(UNAND)

## **QUANTUM-LEAP OF AGRI-FOOD SYSTEM 4.0 AND DELIVERY OF SUSTAINABLE DE- VELOPMENTS GOALS (SDGS)**

September 25-26, 2019



**PROCEEDING**  
**3rd INTERNATIONAL CONFERENCE ON SECURITY IN**  
**FOOD, RENEWABLE RESOURCES, AND NATURAL**  
**MEDICINES 2019 (SFRN 2019)**

**September 25-26, 2019**  
**Convention Hall Politeknik Pertanian Negeri Payakumbuh**  
**INDONESIA**

*Theme:*  
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*Theme:*  
**“QUANTUM-LEAP OF AGRI-FOOD SYSTEM 4.0 AND DELIVERY OF  
SUSTAINABLE DEVELOPMENTS GOALS (SDGS)”**

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**Welcome Message**  
**Executive Chairman of The 3rd International Conference on Security in Food,  
Renewable resources, and Natural Medicines (SFRN) 2019**



Dear Honorable ladies and gentlemen,

Good Morning and Assalamu'alaikum wr.wb

On behalf of the SFRN 2019 organizing committee, I am really honoured and delighted to welcome all of you to the 3rd International Conference on Security in Food, Renewable resources, and Natural Medicines (SFRN) 2019 at the State Polytechnic of Agriculture Payakumbuh, West Sumatra Indonesia

Our technical program is rich and varied with 8 keynote speeches and 4 invited talks and more than 170 technical papers split between 8 parallel oral sessions and 1 poster sessions. The speakers and participants came from 8 different countries, consist of Academicians, Scientists, Researchers, Practitioners, Professionals, and Government Officials in multidiscipline branch of knowledge, who gathered here today to share and discuss new findings and applications of innovations for promoting Food Security, Renewable Energy, Sustainable Resources and HealthCare Free for All, in particular for those who in needs. As the chairman of conference 2019 SFRN, I know that the success of the conference depends ultimately on the how many people who have worked in planning and organizing both the technical program and supporting social arrangements. This year, the conference is jointly organized by the Payakumbuh State Agricultural Polytechnic and Andalas University. We also thank to the steering committee for their wise and brilliant advice on organizing the technical program; and also to the the Program Committee, both from the Payakumbuh State Agricultural Polytechnic and Andalas University , for their thorough and timely reviewing of the papers and to the Director of Payakumbuh State Agricultural Polytechnic and the rector of Andalas University, and the Head of the Institute for Research and Community Service of Andalas University, and Payakumbuh State Agricultural Polytechnic. Our recognition should go to the Organizing Committee members who have all worked really hard for the details of the important aspects of the conference programs and social activities, and then we extend our gratitude to our students who bore the arduous burden for preparing this event.

We hope this event is also a good step in gaining strengthened cooperation between our universities as we know that the State Agricultural Polytechnic of Payakumbuh is part of the Andalas University previously, of course the psychological relationship between the State Agricultural Polytechnic and the Andalas University is really close.

Finally on behalf of the committee, we apologize profusely for all the shortcomings and everything that is not properly in organizing this event and hopefully AES-Network contributes significantly to the research and technology for the good of humanity.

Thank you

**Fithra Herdian, S.TP, MP**

**Message from Afro-Eurasia Scientific (AES) Network  
3<sup>rd</sup>International Conference on Security in Food, Renewable resources, and  
Natural Medicines (SFRN) 2019**



Dear Honorable and Distinguished guests,  
Ladies and gentlemen,

Assalamu'alaikum Warahmatullahi Wabarakatuh and Good Morning

On behalf of the AES Network, I am honored and delighted to welcome you to the 3<sup>rd</sup>International Conference on Security in Food, Renewable resources, and Natural Medicines (SFRN) 2019 at the Agricultural State Poly Technique of Payakumbuh, Indonesia. I believe we have chosen a venue that guarantees a successful technical conference amid the culture, delicacy and scenery of Payakumbuh, the city of “Rendang”.

The AES-Network aims to Promote Livelihood Through Food Security, Promote Future Smart and Green Mobility by Using Renewable Energy, Promote Prosperity by Equally Managing and Distributing the Sustainable Resources and Promoting Enjoyable Long-Life by using Natural Medicines With Free Health Care For All. The AES-Network was established in 2018 and already have memberships from 12 countries. Our members consist of Academicians, Scientists, Researchers, practitioners, professionals, and government officials from multidiscipline branch of knowledge, who gathered and contributed their expertise to share and discuss new findings and applications of innovations for promoting Food Security, Renewable Energy, Sustainable Resources and Free Health Care for All. In particular, the network aims to alleviate the condition of those who in dire needs. In the future, we also expect to provide technical demonstrations, and numerous opportunities for informal networking for Promoting Food Security, Renewable Energy, Sustainable Resources and Free Health Care for All. In this opportunity, we invited you to become our members and join our efforts for a better life to all of mankind.

As a team, we acknowledge the existence of mutual interest among university and college educators, researchers, activists, business sector, entrepreneurs, policy

makers, and all society members. We must promote the need to strengthen cooperation for establishing Security in Food, Renewable Resources, and Natural Medicines in Africa, Europe, and Asia.

The AES-Network believe, a firm foundation for mutual collaboration with the spirit of equality and partnership and thereby contribute towards sustainable development in these three regions.

Therefore, through networking, friendships, and joint efforts, the capacity of our network can be enhanced to address major challenges in securing the Food, Renewable Resources, and Natural Medicines in Africa, Europa, and Asia. Our Network goals are to increase the awareness of educators, researchers, scientific community, business sector, entrepreneurs, and policy makers in Africa, Europa, and Asia, that the future of a better world, lies within their responsibilities, and to improve the networking, mobility and mutual collaboration of scientific community, business sector, entrepreneurs, and policy makers in Africa, Europe, and Asia to energize the delivery of Sustainable Development Goals.

Finally, I hope that, by registering our network, you will be provided a common platform and support the exchange of knowledge, while at the same time, we offer constructive dialogue across and within the various interest and stakeholder groups, including the intended beneficiaries, and arrived at the best solutions to our terminal goal, Promoting Food Security, Renewable Energy, Sustainable Resources and Free Health Care based on scientific evidence in Africa, Europa, and Asian region.

Thank You for Joining us!

**President**

**Assoc. Prof. Dr. Eng. Muhammad Makky**



**Welcome Message**  
**Head of Institute for Research and Community Service**  
**Universitas Andalas**



Dear Honorable and Distinguished guests,  
Ladies and gentlemen,

Assalamu'alaikum Warahmatullahi Wabarakatuh and Good Morning

It is with great pleasure that I welcome the participants of the SFRN 2019 in Payakumbuh, the city of “Rendang”, the prime of Indonesian delicacy.

In this esteem event, we share the knowledges, and imparted it to the people. The quest for knowledge has been from the beginning of time but knowledge only becomes valuable when it is disseminated and applied to benefit humankind. It is hoped that this conference will become a platform to gather and disseminate the latest knowledge which can be adopted for securing the food, resources, and health for mankind, in Asian, European and African region.

Academics, Scientists, Researchers and practitioners from multidiscipline branch of knowledge who gathered here today will be able to share and discuss new findings and applications of innovations for ensuring food security, in particular for those who reside in developing countries. It is envisaged that the intellectual discourse will result in future collaborations between universities, research institutions and industry both locally and internationally. In particular it is expected that focus will be given to issues on environmental and sustainability. Therefore, we urge to all participants, to establish a scientific network that will voice the needs

Researchers in the multi sectoral aspects related to the benefit of mankind have been progressing worldwide. Food is a basic right, while energy drive the world. Human need a lot of resources so the civilization can be flourished. But human is not immune, and thus, ones need to take care of their health regularly. Modern Agri-food systems is the foundations of a decent life, a sound education and the achievement of

the Sustainable Development Goals. Over the past decade, we have witnessed a chain reaction that threatens the very foundations of life for millions of the world's people. Rising energy prices drove up the cost of food and ate away the savings that people otherwise would have spent on health care or education. Unsustainable plantation management induced forest fire and posed haze hazard to the whole Sumatra island and our neighboring countries.

The human cost of the food and energy crisis has been enormous. Millions of families have been pushed into poverty and hunger. Thousands more suffering from the collateral effects. Over the past year, food insecurity led to political unrest in some 30 countries. Yet because the underlying problems persist, we will continue to experience such crises, again and again -- unless we act now. That is why we are here today.

We must make significant changes to feed ourselves, and most especially, to safeguard the poorest and most vulnerable. We must ensure safety nets for those who cannot afford food, or energy, nor even a health service. We must transform agricultural development, markets and how resources is distributed. We must do so based on a thorough understanding of the issues. That is the only possible way we can meet the Goals of Sustainable Development.

Thank You,

**Assoc. Prof. Dr.-Ing. Uyung Gatot S. Dinata,MT.**

**Opening Ceremony  
Rector of Andalas University**



Dear Honorable and Distinguished guests,  
Ladies and gentlemen,

Assalamu'alaikum Warahmatullahi Wabarakatuh and Good Morning

I welcome the opportunity to address you at this important event.

It gives me great pleasure in welcoming you to this 3<sup>rd</sup> Conference on "Security in Food, Renewable resources, and Natural Medicines (SFRN)" 2019. I am delighted that so many have accepted our invitation. I am particularly happy that we have in this room, dedicated individuals from so many stakeholder groups — including our most respected and distinguished guest “The ministry of Agriculture of the Republic of Indonesia”. We also welcome the mayor of Payakumbuh and the Regent of Lima Puluh Kota. We extend our welcome to the civil society, the private sector, international organizations; the science community; and others dedicated to help create an environment in which people can escape food insecurity. Imagine what we can do together if we make the security for all as an our top priority, and pull in the same direction. We can make a difference in the lives of millions.

Food is a basic right. Food security are the foundations of a decent life, a sound education and the achievement of the Sustainable Development Goals Access to medicines - a fundamental element of the right to health. Health is a fundamental human right, indispensable for the exercise of many other rights in particular the right to development, and necessary for living a life in dignity. Moreover, human rights principles and language are being used to support resource access claims as rights-based approaches empower individuals and groups to gain or maintain access to natural resources

Much progress has been made during the last decades but much more needs to be done. Millions of people are Insecure worldwide, meaning that they either starve or they do not know from where their next meal, health care or resources will come.

Much of the progress on security has occurred at the expense of our environment. With business as usual, we foresee that the production improvements during the next decade will be less than the last one, while the environmental degradation will continue, and health will deteriorate significantly. Without available resources to seek, mankind will become endanger species in a very short time.

Solutions to the security problems need to be designed and implemented within a new and rapidly changing environment. Globalization and sweeping technological changes offer new opportunities for solving these problems. A number driving forces or trends must be taken into account in developing appropriate action. Some of the action needed, such as appropriate technology for small farms, is not new but it must be cast in the new and changing global and national environment, taking into account new opportunities and risks. I hope that by providing a forum for knowledge exchange, this conference will help identify the action to be taken. Furthermore, this conference will help to provide constructive dialogue across and within the various interest and stakeholder groups, including the intended beneficiaries, and arrive at the best solutions.

In conclusion, even if those responsible give high priority to achieving sustainable security for all and back it up with action, the world may not achieve the goal by 2030. But we will be much closer than with business as usual. I urge all of us to provide the strongest support for this event, to enable securing the food for all in the closest time possible. It is my sincere optimism that through the accomplishment of the objectives of this event, we will come to an important step nearer to secure the food for all.

Finally, I would like to thank the organizing committee who have spent their utmost efforts to prepare and manage this event successfully. Let me conclude my remarks by wishing our guests happiness, good luck and great success in the conference.

May I announce now the opening of the “3<sup>rd</sup> International Conference on Security in Food, Renewable resources, and Natural Medicines (SFRN) 2019” in Payakumbuh.

Thank you.

**Rector,**  
**Prof. Tafdil Husni, SE, MBA, PhD**

**Welcome Message**  
**Director of Politeknik Pertanian Negeri Payakumbuh**



Dear Honorable ladies and gentlemen,

Good Morning and Assalamu'alaikumwr.wb

I congratulate to all participants on the invitation and participate at our beloved campus Payakumbuh State Agricultural Polytechnic. I feel really honoured to welcome all of you at our event, the 3rd International Conference on Security in Food, Renewable Resources, and Natural Medicines (SFRN) 2019 at the Payakumbuh State Agricultural Polytechnic, Indonesia.

Food security is a very important aspect in a country's sovereignty. Food also determines the future direction of a nation. Many social and political fluctuation can also occur if food security is disrupted. Food availability that is smaller than its needs can create economic instability. This critical food condition can even endanger economic and national stability. In the current situation, there are many challenges in exteriorize food security, such as climate change, population, limited natural resources and other challenges both locally, regionally and globally.

Renewable resources are also our starting point to start sustainable development. Research on renewable resources is also very important as the solution in meeting the principles of sustainable development. As we know that Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainability is the foundation for today's leading global framework for international cooperation - the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs)

The discovery of treatment based on local culture also contributes greatly to the good of humanity. Unfortunately, there are still many treatments that have not been carried out by scientific research. So, through this conference we hope it can be a trigger to increase in traditional plant-based treatments that not go through complex

chemical processes, so that the effectiveness of the pillars can be further suppressed and also contribute to the community's economy.

Finally, I would like to express my gratitude to all people who involved in organizing this event and to all of stakeholders who have helped to make this event go on successfully. Please accept my apologize for any shortage, Assalamu'alaikumwr.wb.

Thank you

**Ir. Elvin Hasman, MP**

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## Utilization of Organic Material *In situ* to Increase the Absorption N, P, K and Soybean Results on Gold Mining Fields in Sijunjung Districts

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**Abstract.** Gold mining in Sijunjung Regency is usually carried out illegally by riverbanks and traditional community-owned rice fields. Problems faced in this former mining land are low productivity due to poor chemical properties of the soil itself such as acid soil, N-total, P-available, Cation Exchange Capacity (CEC) and base content (K, Ca, Mg and Na) which is low and also Al which is dissolved in the soil is very high as a result nutrient absorption will also be low. One way that can be done to improve the availability and uptake of soybean that is with the use of organic materials in situ that can provide nutrients for the soybeans. This research was conducted in Nagari Pala Luar, Koto Tujuh District, Sijunjung Regency for 3 months and continued with analysis in the Soalas Laboratory of the Faculty of Agriculture, Andalas University. The design used in this study was a Randomized Block Design (RAK) with 5 treatments and 3 replications, with treatment A = Control, B = 0.5 kg rice straw + 0.5 kg manure, C = 1 kg rice straw + 1 kg manure, D = 1.5 kg rice straw + 1.5 kg manure, E = 2 kg rice straw + 2 kg manure. Data analysis using 5% ANOVA table if F count is more than F table 5% and BNJ further test 5%. From the results of the study it can be concluded that the use of inorganic materials can increase nutrient uptake and soybean yields in the former gold mine land in Sijunjung Regency.

**Keywords:** organic material insitu, nutrient uptake, ex-mining land, soybeans

### INTRODUCTION

Ex-mining land is an area that has been illegally mined and the soil conditions have changed, so it is very difficult to be used as agricultural land. Illegal mining is spread in Indonesia, one of which is in Sijunjung Regency, which reaches 15 hectares. This gold mining is spread in various areas including in District Nagari IV, District Koto VII, and District Kamang Baru (BPS, 2011).

Ex-mining land is soil that is poor in nutrients and lacks microorganisms in the soil. In other words, mined soils have problems both in terms of chemical, physical and biological properties. Poor physical, chemical and biological properties of the soil determine the ability of the soil to produce well.

Other problems faced in this former mining land are low productivity due to poor physical and chemical properties of this land including low water holding capacity, large porosity, low soil fertility such as acid soils, N-Total, P-available,

exchange capacity the cation (CEC) of the soil and the low alkaline content (K, Ca, Mg and Na) and also the dissolved Al in the soil is very high and the low uptake of plant nutrients present in this former mining land, so that the land is very difficult to make as agricultural land. One way that can be done to overcome this problem is by providing organic fertilizer *In situ*. organic fertilizer *In situ* is an organic fertilizer that can be made by local farmers using basic materials such as rice straw compost and cow manure. Nutrients contained in compost, especially rice straw compost are Si 4-7%, K<sub>2</sub>O 1.2-1.7%, P<sub>2</sub>O<sub>5</sub> 0.07-0.12% and N 0.5-0, 8% (Hardjowigeno, 2003).

Soybean is one of the few crop commodities that has important economic value in Indonesia. This is related to the role of soybean seeds as a source of vegetable protein at low prices. As a result demand continues to increase in line with an increase in population.

## **MATERIALS AND METHODS**

This research was conducted in Nagari Pala Luar, Koto Tujuh District, Sijunjung Regency for 3 months and continued with analysis at the Soalas Laboratory, Faculty of Agriculture, Andalas University. The design used in this study was a 5x3 Random Block Design (RBD) with 5 treatments and 3 replications, the treatment using LCC plants where:

A = Control

B = 0.5 kg of straw + 0.5 kg of cattle feed

C = 1 kg of straw + 1 kg cow dunk

D = 1.5 kg straw + 1.5 kg cow dunk

E = 2 kg straw + 2 kg cow dunk

Analysis data using the Anova table 5% if F count is more than F table 5% and further tests BNJ 5%.

### **Research Implementation**

#### **Making straw compost + manure**

The composting process begins with chopping rice straw with a machine (chopper) so that it is 3-5 cm in size and then mixed with manure. To speed up the compost decomposition process plus EM4 decomposer. Rice straw and manure are stirred evenly and then piled on incubation containers or curing (thick black plastic) placed in the room so as to avoid rain. After one week, the compost is turned over or stirred again. Curing is finished after 6-8 weeks.

#### **Land preparation Land**

Preparation begins with weeding the land from existing weeds. After weeding is done making trial plots with a size of 2m x 3m with a height of 20 cm and a distance between plots of 50 cm. Experimental plots were made with a height of 20 cm by digging or hoeing the distance between plots as deep as 20 cm.

### **Provision of treatment and incubation**

Provision of treatment is carried out after the completion of tillage and making beds. Compost is given in accordance with the established treatment by spreading it on a bed and then stirring it evenly. Then do the incubation for 1 week.

### **Planting**

Soybean planting is carried out by sowing and inserting 2 seeds / holes with a spacing of 25 x 25cm.

### **Maintenance**

Maintenance carried out during the study includes watering, weeding from weeds, and eradicating pests and diseases. Watering is done every day (1 time a day) if the day is not raining. Weeding is done by pulling every weed that grows.

### **Harvest**

Harvesting is done when the plant is  $\pm$  80 days old. Characteristics of soybean plants that are ready to harvest are the leaves have yellowed and began to fall, brownish-yellow soybeans, pods are already filled and look cracked.

### **Observations**

#### **Soil observations Soil**

Observations include determining some of the chemical properties of soils. Analysis carried out in the Laboratory includes analysis of pH measured with a pH meter, Al-dd by the volumetric method, N-total by the Kjeldahl method, P-available by the Bray II method, K which can be exchanged for a washing method with ammonium acetate pH 7 and C-organic with the Walkey and Black method.

### **Plants**

#### **a. Plant height (cm)**

Plant height measurements are carried out every week, measurements begin when the plant is 2 weeks old with a time interval of 1 time a week until the vegetative period ends (entering the generative phase).

#### **b. Weight of 100 seeds (grams)**

Observation of the weight of 100 seeds is carried out at harvest time, observations are made by weighing 100 seeds in each plot, then converted into tons / ha. Data were analyzed statistically.

#### **c. Absorbtion Nutrient of N, P and K of plants**

Observation of plant nutrient uptake is carried out after harvest by analyzing in the Laboratorium.

## **RESULTS AND DISCUSSION**

### **Plant**

Height Measurement results of soybean plant height in mined land can be seen in table 1

Table 1. Soybean plant height

<b>Treatment</b>	<b>Average plant height (cm)</b>
A = Control	30,30
B = 0.5 kg of straw + 0.5 kg of cattle feed	36,54
C = 1 kg of straw + 1 kg cow dunk	36,43
D = 1.5 kg straw + 1.5 kg cow dunk	29,85
E = 2 kg straw + 2 kg cow dunk	36,32
KK = 15%	

From the above table it can be seen that the administration of rice straw compost and manure can increase plant height when compared with control (treatment A). The increase in plant height from each treatment is due to the nutrient content found in rice straw and manure. Widyati (2008) which states that the application of manure into the soil can improve the physical condition of the soil becomes loose, soil aeration becomes better so that absorption of nutrients by plants will be easier, but the provision of manure in addition to improving the physical properties of the soil also provides elements nutrient in a long time, improve soil structure and encourage the life of microorganisms.

Soybean plants need sufficient nutrients for their growth both vegetative and generative. Planting density of course also affects the absorption of nutrients that have been provided, this is related to competition for nutrient absorption.

### **Weight of 100 seeds**

The results of weight analysis of 100 soybeans on ex-mining land can be seen in table 2

Table 2. Weight of 100 seeds

<b>Treatment</b>	<b>Average weight is 100 beans (gram)</b>
A = Control	32,00
B = 0.5 kg of straw + 0.5 kg of cattle feed	30,00
C = 1 kg of straw + 1 kg cow dunk	33,00
D = 1.5 kg straw + 1.5 kg cow dunk	32,00
E = 2 kg straw + 2 kg cow dunk	33,33
KK = 8%	

Based on the table above it can be seen that the highest weight of 100 seeds is found in treatment E that is equal to 33.33 grams, this is in line with good growth in the treatment E. This is in accordance with the opinion of Tawakkal (2009) which states that the higher the dose of compost fertilizer given will increase production to the optimum point and decrease production after passing the optimum point.

Besides the high weight of 100 seeds in treatment E is also caused because in this treatment E plants are able to utilize the P and K available in the soil. Raintung (2010) adds that high production is also due to the fact that plants are able to utilize the P and K available in the soil.

### Absorbtion Nutrient Nitrogen (N)

The results of the analysis of nitrogen uptake in soybean plants can be seen in Table 3.

Table 3. Results of the analysis of soybean nitrogen uptake

No.	Treatment	Soil	Absorbtion N (%)
1.	A = Control	0,20	2,45
2.	B = 0.5 kg of straw + 0.5 kg of cattle feed	0,23	3,29
3.	C = 1 kg of straw + 1 kg cow dunk	0,36	3,64
4.	D = 1.5 kg straw + 1.5 kg cow dunk	0,48	4,76
5.	E = 2 kg straw + 2 kg cow dunk	0,51	5,04

From the table above it can be seen that the highest nutrient uptake of N is found in treatment E. This is caused by high soil N nutrient content in the treatment. Hakim *et al.*, (1986) explained that N fertilizer added to the soil about 20-30% was absorbed by plants and the rest was lost with percolated water or bound by colloidal soil

### Absorbtion Nutrient Phosphorus (P)

The results of the analysis of phosphorus uptake in soybean plants can be seen in Table 4.

Table 4. Results of the analysis of soybean phosphorus uptake

No.	Treatment	Soil	Absorbtion P (%)
1.	A = Control	1,85	0,30
2.	B = 0.5 kg of straw + 0.5 kg of cattle feed	3,53	0,53
3.	C = 1 kg of straw + 1 kg cow dunk	4,67	0,58
4.	D = 1.5 kg straw + 1.5 kg cow dunk	6,54	0,90
5.	E = 2 kg straw + 2 kg cow dunk	8,52	0,95

From the table above we can see that the highest P uptake is found in treatment E which is 0.95% . The high P uptake in treatment E is in line with the high soil P nutrient content in treatment E which is caused by the addition of rice straw compost and manure into the soil which can increase the P-available soil content. This is consistent with the opinion of Susilo (1991 *cit* Herviyanti, 2007) suggesting that the concentration of the P element in the solution is generally very low, but the P level can be increased by increasing the dose of fertilizer and adding organic matter to the soil.

Hakim *et al.*, (1986) stated that P nutrient levels by plants would increase with increasing P. solubility.

### Absorption Nutrient Potassium (K)



Results of analysis of potassium uptake in soybean plants can be seen in Table 5.

Table 5. Results of analysis of potassium uptake soybean

No.	Treatment	Soil	Absorbtion K (%)
1.	A = Control	0,21	0,85
2.	B = 0.5 kg of straw + 0.5 kg of cattle feed	0,32	0,85
3.	C = 1 kg of straw + 1 kg cow dunk	0,43	0,93
4.	D = 1.5 kg straw + 1.5 kg cow dunk	0,48	1,06
5.	E = 2 kg straw + 2 kg cow dunk	0,52	1,14

From the table above we can see that an increase in K uptake per treatment. The highest K uptake was found in treatment E that was equal to 1.14%. The high uptake of K plants in all treatments is related to the increase in K-dd content of the soil. This increase is due to the provision of rice straw compost and manure which can contribute base cations, especially K to the soil. From the results of the analysis of Gusnidar *et al.*, (2008) straw containing K as much as 1.93%, so as to increase the K-dd content of the soil, then the K absorption of plants also increased.

Soegiman (1982) and Hardjowigeno (2003) explain that K is not a constituent element of plant organic compounds, but rather acts as an activator. Potassium functions in the formation of starch, activates enzymes, and opening of stomata.

## CONCLUSION

From the results of this study it can be concluded that the provision of 2 kg of straw + 2 kg of cattle / bed can increase the growth and nutrient uptake of soybean plants in the former gold mining land.

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