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RESEARCH ARTICLE

ANIMAL FEED PACKAGING INNOVATION MADE FROM GREEN SORGUM TO REDUCE PRODUCT DAMAGE IN THE STORAGE PROCESS

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Abstract

Silage as a feed ingredient for ruminants is very helpful for farmers in fulfil need feed . Traditional breeders who are only able to raise livestock on the side cannot earn money decent income. Livestock must always innovate in making animal feed so that they do not depend on looking for grass every day. Making silage as animal feed can help sustainable livestock farming. Community service was carried out in Weling Hamlet RT03/04 Cibuluh Village, Ujungjaya District, Sumedang Regency. Training on making silage was carried out with farmer groups, with processing the main ingredient being sorghum stalks . At the moment Still there is goods produced too Many NGs are caused by biting mice plastic resulting packaging holes in plastic packaging .NG caused Can reached 15% of capacity stored production at warehouse. Done repair packaging with use a plastic drum so free from bite mice on packaging at a time repair quality nutrition . In improving Sorghum tree nutrients are chopped using a cupper machine , then mixed with bran, molasses, groats, stirred and packaged using plastic drums. Making airtight silage ensures that outside air does not enter, because if the material is contaminated with outside air it will become damaged and moldy.

Introduction:-

Most of the breeders throughout Indonesia , system maintenance cattle ruminants that exist in various area Still nature traditional . This matter seen about technique giving feed livestock and type feed given. Giving technique feed made that is with method look for grass or with method herding cattle. Temporary that, kind of feed given form existing grass around pen. Likeis known that existence and quality Grass is very volatile and depends on the season . As stated by Somanjaya et al. (2016) that generally on farmspeople, quality and quantity the forage provided is very fluctuating. Different very with feed source from giving forage obtained at the time season rainy season and season drought. Availability feed forage and qualityforage feed in season very low dry season Because difficult obtained .

Efforts to overcome lack feed forage at the moment season drought as in 2023 caused drought long and forincrease qualityforage can takenwith method preservation through a fermentation processor silage so at the moment season drought availability and quantity supply feed will still sufficient with Good. Silagebased on the definition is a preservation process forage feed with methodfermented and stored in circumstances anaerobes. According to KungJr. et al. (2018), objectivesmaking silage is for produce stable feed through the recovery

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process materialvery easy dry, energy, and nutrition digested compared to with fresh greens. Temporary that, Muck (2010) explains that the ensilage process generally aim forcontrol activity microbes with create environment anaerobic and fermentative natural sugar by bacteria sourlactate in forage so that can saved in period quite a long time withoutlower quality the nutrients.

Entire part **plant sorghum** can givento cattle ruminants. Forage the capable add weight cow male amounting to 1.2–1.6 kg per day. Apart from that, if sorghum easy get it, you can make fare feed more save Rp. 2,000–Rp. 3,650/ day . According to breeder fattening cattle in the District Rangkasbitung, Lebak Regency, Banten Province, without sorghum need feed per head cow is 3 kg of hay and 8 kg of concentrate per day. If it's a cow given sorghum, volume of concentrate applied Can reduce to 4 kg and quantity 10 kg of sorghum is given per day.

Plant sorghum more nutritious compared grass elephant, grass Taiwan, and straw paddy. Forage This contains crude protein by 10–12%. The protein level approach mark crude protein requirements fattening cow around 13%. Sorghum can become substitution Corn often _ difficult obtained by breeders. Content nutrition second plant This almost The same . Starting from seeds, stems, up the leaves Can given for cow. However, before given, sorghum need cut pieces with size 6–10 cm first formerly cows for more easy digest it. Sorghum Can givenin fresh form or form silage. Silage is sorghum already preserved. The way to make it is very easy , sorghum only need cut 6–10cm long , then entered to receptacle tight air and fermented in a way experience .

Apart from improving weight, plant This Can increase lust Eat cow compared forage grass. That matter Already proven by several breeder in Serang, Banten. When given sorghum , cow seen greedy , however after replaced grass elephant cow seen reluctant Eat. Lust Eat cow Can increase Because forage This more smells and tastes moresweet rather than grass. Sorghum can grow good on land marginal, where land the usually form land sour with rate the aluminum tall so that cause root plant damaged. Apart from that, plants This Can developed on land dry. That matter can makes it easier breeder when season drought or in the area with limited water supply .

Silage Sorghum is very popular with livestock ruminants. Packaging silage smelly sorghum fragrant typical forage like tape apart favored by ruminants and also favored by mice.Favorite mouse in eat silage sorghum with method damage packaging plastic used, After Plastic packaging was holed by mice so damage quality silage overall, because wrap it properly tight air So resulting holemoldy. The silage is done moldy already no can consumed by livestock ruminants. It happened hole in the packaging plastic the result damaged product. It happened damaged product result loss to the industry feed. Easy to bite packaging rats are very detrimental industry feed up to 15%.

Implementation Method:-
Research activities were carried out in Weling Hamlet RT03/04 Cibuluh Village, Ujungjaya District, RegencySumedang. Study conducted from 03 May 2023 to 4 November 2023. Research done in forage preservation technology or This silage feed is for ruminant farmers consisting of 2-4 cattle breeders and sheep breeders.

Types and sources :
The data used comes from primary data and secondary data, both qualitative and quantitative. Primary data was obtained throughdirect observation in the field and direct interviews with perpetrators. Meanwhile, secondary data was obtained through searchvarious literature studies and literature relevant to the research topic .

Method of collecting data:-

Data collection methods used is method survey , observation field , interview structured to breeders and to perpetrator industry feed . Methods for collecting data on breeders use interviews and discussions with perpetrator industry feed . Amount breeder who became respondents to the research Thistotaling 17 people and 1 perpetrator industry feed .

Methods and data analysis:
Descriptive analysis
Analysis descriptive aim For describe problems that occur with packaging silage made from forage sorghum . Apart from that, also for describe performance business feed cattle made from forage about potency the market.

Figure 1:- Plastic used packaging product damaged.

Figure 1 is pocket plastic used packaging silage damaged sorghum holes caused bite mouse. Bitten packaging mouse will hole so that air outside enter in pockets that cause silage moldy. Moldy silage no can again beingused on livestock. Utilization damaged silage can used as fertilizer compost. Figure 2 is damaged silage used moldy.

Figure 2:- Product silage damaged moldy.

From the incident damaged production reached 15 % of course make perpetrator industry feed loss. In order to reduce lossthe need do innovation in packaging so that losses caused the damage resulting packaging bite mouse or pegged chicken can removed.

Several stages were carried out in this research , namely the preparation stage, counseling stage, training stage, and evaluation stage, with notice wisdom material from environment :

1. Preparation Stage

A number of prepared toolsbefore implementation activity including grass coper (chopping) machine, 8 silage bags with a capacity of 30 kg, 60 plastic bags, tarpaulin base, sprayer, digital scale, fork for stir materials, and a dustpan rubber for enter material to in a silage bag. Temporary that is, the materials used that is forage sorghum,molasses

(molasses), ground bran, groats.

2. Experimental stage model 1 and model 2

Next stage in One Suite activity study the is practice making silage For ruminant cow . Materials that have been available form forage tebon sorghum chopped with cooper machine with size 6 – 10 cm. Before practice held the material is left alone during not enough more than 6 hours, with Meaning For lower forage water content until to in ideal conditions for the silage process (6-70%). Next, the forage that has been done chopped sprayed with molasses with method sprayed as well as stir to make molasses equally. Model 1 (plastic gasket) stirred sorghum with Molasses is added into the plastic 30 kg packaging weighed while compacted Then closed meeting. Model 2 (plastic drum gasket) prepare the plastic drum capacity 30 kg, insert mixture groats and bran fine as basic or base on a plastic drum with thickness about 5 cm, next insert count forage sorghum into the drum with method compacted in a way maximum. Top entered Again mixture bran with groats with thickness about 5 cm. Close the drum with plastic sheet and use cover the drum with lock it in a way meeting. Final stage from that process is store plastic drums and wrapped silage plastic with free from ray sun direct nor water, also avoid it range chicken nor mice can hollow out plastic.

3. Evaluation Stage

Evaluation done to two matter that is ability public in demonstrate making silage with indicator quality the resulting silage. Skill level public in practice making silage covers a number of indicatorincluding abilities catch material provided as well as suitability between material presented with practice carried out. Temporary that's quality the resulting silage after saved for a minimum of 14 days seen based on a number of indicatorthat is color forage Still like Again, it smells typical sour silage, no moldy, and not rotten so that can favored by livestock.

Evaluation :

One that is decisive in business farm is feed, prepared feed inits availability with Good will impact on sustainability business. Evaluation for packaging model 1 or packaging model 2 in feed concentrate of course it will too affect costs. The following is a comparison table, advantages and disadvantages can seenas following:

Table 1:- Model one and model 2.

Model 1	Model 2
Excess : ➢ Cost gasket more cheap ➢ Do not eat place ➢ Gasket more fast Lack ➢ Easy to leak ➢ Maximum stack 3 ➢ Easy bitten mouse ➢ Easy torn time loading and unloading	Excess : ➢ Doesn't leak easily ➢ More feed durable _ ➢ Can use several times ➢ Can't bitten mouse ➢ Safe loading and anloading times ➢ Can stacked more of 3 stacks Lack : ➢ Cost of gasket is expensive

Counseling and theoretical training for farmers and breeders. Regarding the materials used, chopping equipment and expected silage size. Shelf life of silage and how to protect silage in the warehouse from rodent attacks. Silage that will be consumed in its own cage or silage that will be sold in different packaging a.

Figure 3:- Forage material sorghum stirred and added to in drums.

Forage sorghum already chopped and sprayed with molasses stirred then entered to in a plastic drum already prepared .

Figure 4:- Forage material entered into the drum and compacted then weighed.

After entered into the drum the forage is compacted with use stick wood or stepped on with using your feet. Weighing done after fill the drum full , don't do compression on scales.

Figure 5:- Top part given bran as well as groats and closed meetingtop part is closed with bran already mixed with groats with thickness 5 cm for perfect the silage process so that it doesn't leak air from outside as well as add nutrition feed.close drum meeting as well make sure no there is leaks, store it in a safe place caught sun direct for 10 days then can used.

Conclusion:-

Innovations made in the packaging process feed animal cattle ruminant can eliminate possibility disturbance by chickens nor mouse in the storage process. At the moment Still there is goods produced too many NGs are caused by biting mice plastic resulting packaging holes in plastic packaging.NG caused Can reached 15% of capacity stored production at warehouse. Done repair packaging with use a plastic drum so free from bite mice on packaging at a time repair quality nutrition with he added bran and groats. In improving Sorghum tree nutrients are chopped using a cupper machine , then mixed with bran, molasses, groats, stirred and packaged using plastic drums. Making airtight silage ensures that outside air does not enter, because if the material is contaminated with outside air it will become damaged and moldy .

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