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Danger Alleviation in Tangible Preservation for Vegetable Result in Cisangkuy Substitute-Area for water draining, Bandung Regime, West Hot beverage made from beans of a tree

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Abstract
Vegetables are a crop that grows in small hill fields, and Bandung Regime is individual of the main vegetable result centers in West Hot beverage made from beans of a tree. This result center is situated in an environmentally met suburb growth field inside the Cisangkuy Substitute-Area for water draining of Bandung Regime. The purpose concerning this study search out recognize risks emergent from differing risk beginnings and to plan risk control policies for vegetable result in this place domain. The pattern secondhand is delegation of representatives of risk (HOR) form. In gardening actions, laborers must obey material organizing. Still, many growers are still ignorant of the significance of incidental sustainability, specifically in their use of projectiles for weaponry. To energetically undertake preservation of natural resources exertions, it is important to think the traits of vegetable growers in Bandung Regime, particularly those situated in the growth field of environmentally met villages inside the Cisangkuy Substitute-Container or area where water is held. The results concerning this study recognized 33 risk occurrences. The risk occurrence accompanying the maximal impact is saturated plants (E10), accompanying an impact worth of 8.9. Established the Pareto drawing, 16 arrangement risk beginnings need expected focused on. Ultimate meaningful risk beginning labeled is the use of uncertified children (A29). To check risks in vegetable result, 21 deterrent conduct (PAs) have happened projected. Individual of ultimate productive approaches is for ranchers to purchase source vegetables straightforwardly from Balitsa (PA1), accompanying an influence percentage (ETD) of 4372. Another urged method search out purchase notified sources from different breeders (PA2). These designs are prioritized to weaken the risks met by vegetable growers.

Keywords: Vegetable cultivation, Risk management, cisangkuy region, Environmental sustainability, saturated plants

1. Introduction

Indonesia is famous as farming country, that method a country that depends the land subdivision two together as a beginning of occupation and as a support for incident. Farming is individual of ultimate main subdivisions in people's salary in Indonesia, as the adulthood of the culture everything as growers. Persuasive risk administration and alleviation are important for the gain of some activity, containing land movements attempted by producers. They help to recognize, determine, and address miscellaneous potential warnings, in the way that surroundings change, crop ailments, and quoted price vacillations, that can prevent movements. Accompanying good risk administration designs, producers can improve the sustainability of their movements, weaken deficits, and guarantee elasticity in spite of vital and changeable challenges.

The Cisangkuy Substitute-Area for water draining is individual of the substitute-watersheds that are affiliated to the Citarum Turning point. In accordance with the Department of Public Growth Plan- complai/Governmental Incident Preparation Instrumentality (Bappenas) established in 2012, the Cisangkuy Substitute-Turning point is one the hard on someone Citarum Turning point situated in Bandung Regime. This substitute turning point covers an field of 34,159 hectares and has a inexperienced water discharge of 1600 L per second, making it a key safeguard for providing inexperienced water to Bandung City and Bandung Regime. Furthermore, this substitute-container or area where water is held is a beginning of power for Bandung and allure encircling fields through the Cikalong, Lamajan, and Pangalengan hydropower plants.

The Citarum Container or area where water is held is the most protracted in the domain, reaching from the headwaters at Situ Cisanti to the Muara Gembong 'Satisfied Waterfront.' This area for water draining forms the Citarum Waterway scheme, risinging from the springs at Grow Wayang in Kertasari Subdistrict, Ban- excrement Regime, and gushing into the Hot beverage made from beans of a tree Pond in Karawang Regime. It spans nearly 315 km and contains 105 tributary that flow into penal institution.

Established Decree Number 30 of 2018 circulated for one Bureau of Surroundings and Silviculture, the Citarum Area for water draining covers an extent of nearly 682,227 hectares. The flow of the Citarum Waterway is took advantage of for one Saguling, Cirata, and Ir. H. Juanda (Jatiluhur) Reservoirs for differing happening exercises, containing as a beginning of quaffing water, watering, capacity production, and modern water. Furthermore, it serves as a waste accumulation for miscellaneous household and non-household endeavors inside the area for water draining [1, 2].

The Citarum Waterway is violated by technical, animals raised on a farm, land, and household waste. Furthermore, land adaptation, disgraced land, weak society demeanor, degrada- tion and exhaustion of water beginnings, and challenges in police officers wait meaningful uncertain issues. This research aims to support a valuable hypothetical groundwork for post- ies had connection with ecovillage sustainability in the Superior Citarum Container or area where water is held by first testing the sustainability of ecovillage happening in this place domain, situated in West Hot beverage made from beans of a tree Responsibility, Indonesia [3]. The wonder of growing land result in watersheds is matching: while land result rises, loud noises again escalates, two together on account of land change and the land actions themselves.

Land adaptation in watersheds results in changes in the hydrological environments of the turning point, to a degree a declined combination of water into the soil, raised peak discharge, vacillations in discharge 'tween seasons, raised surface not present, inundation, and dryness. Watersheds maybe believed as timber in the form of stocks accompanying differing takeover (private, public, state-possessed). Watersheds produce merchandise and duties for things, society groups, and all and cause relation middle from two points bodies, things, and society groups [4]. Accordingly, a turning point maybe considered as a method. A container or area where water is held resides of miscellaneous pertain parts, so needing whole and joined area for water draining administration. The Citarum Waterway is the most protracted waterway in West Hot beverage made from beans of a tree Responsibility, elongated 297 km from allure headwaters, that is to say Situ Cisanti, on the slopes of Rise Wayang, Cibeureum Center, Kertasari Subdistrict, Bandung Regime, to the Hot beverage made from beans of a tree Pond, place it empties into Pantai Bahagia Suburb, Muara Gembong Subdistrict, Bekasi Regime [3].

People's healthful behavior has raised legume use. Also, the transport advantage of Indonesian herbs resumes to increase. Individual of the herbs that has the potential expected exported is vegetables. Vegetable (*Solanum tuberosum* L.) is individual of the five chief merchandise of migratory produce. The five superior possession of migratory herbs incorporate vegetable, vegetables, shallots, tomatoes, and abundant chilies [5]. Vegetable plants produce tubers as a produce possession that is to say prioritized for growth and has the potential expected retailed domestically and exported. Vegetable use in Indonesia fluctuates occurring. Vegetable devouring in a period in Indonesia in 2016 raised from the 2015 use of 2.284 kg/capita/old age to 2.503 kg/capita/period. Nevertheless, in 2017, it cut down to 2.220 kg/capita/period. The following old age, it raised to 2.282 kg/capita/period.

The Main Board of Enumerations (BPS) in 2023 written that household vegetable con- sumption in Indonesia attained 87,250 tons in 2022. This amount raised by 13.32% distinguished to the prior period, that was 771,460 tons. West Hot beverage made from beans of a tree is individual of the vegetable result centers in Indonesia. West Hot beverage made from beans of a tree is a land detached into a steep large region in the on west side when facing north accompanying an peak of in addition to 1500 m above ocean's surface, a mild exteriority of object district not definite accompanying an distance of 100–1500 m above ocean's surface, a big plain extent in the northward accompanying an peak of 0–10 m above ocean's surface, and a waterway pool district. The average hotness in West Hot beverage made from beans of a tree is 25.70 [6]. Established the terrestrial site, it is not unexpected that West Hot beverage made from beans of a tree is the center of concerning farming crop result. In 2016, West Hot beverage made from beans of a tree enhanced the best herb result center in Indonesia, accompanying a total result of 25,784,137 tons [5].

In accordance with the Principal Agency of Enumerations established in 2022, Bandung Regime, all at once of the vegetable result centers in West Hot beverage made from beans of a tree, has proved changing result levels from period to period. In 2020, result was 652,152 quintals, in 2021, it was 706,782 quintals, and in 2022, it was 688,652 quintals. Skilled are 31 substitute-departments in Bandung Regime. Pangalengan Sector is the best vegetable result center in Bandung Regime on account of allure bigger result distinguished to additional parishes. Nevertheless, vegetable result fluctuates done yearly, growing in 2021 but diminishing repeated in 2022. This vacillation is produced by various determinants, containing land methods, epidemic and plant affliction, plague attack, wandering weather, and harvests that do not meet advantageous position for those selling. Then, growers need to survive the risks that they face and implement alleviation plans to address these issues, particularly all the while the result chapter. Even though peasants face questions further the result chapter, this time is important as it impacts the former stages.

The land area faces capital departure on account of the failure to equate manufacturing and the help area and has greater risk actions distinguished to different subdivisions [7]. Usually, the land subdivision has a bigger level of risk distinguished to additional areas [8]. Really, weather environments and different normal phantasms create the land subdivision very dangerous [9]. Also, skilled are added doing determinants, to a degree changes in the prices of land commodity, fertilizers, and added inputs, in addition to monetary and governmental doubts situated on sides [10-15]. Land risk administration has enhance a main concern of many arrangings alive in this place field, particularly in underdeveloped countries [16, 17]. Many policymakers are still expect habits to authorize an active and adept risk administration group providing support to members in farming [18, 19]. Many analysts and masters are obey to the subject of risk administration in land supply chains. Supply chains in the foodstuff manufacturing are

more difficult than additional supply chains on account of the rot character of fare distinguished to added possession [20, 21]. Me has attended a history review and research on risk administration because 2018. The research review was administered utilizing the PRISMA drawing (Favorite Newsgathering Articles for Orderly Review and Meta-Reasoning). In accordance with Geerardyn and others. (2021), this drawing is used to assist in labeling items expected inspected. The PRISMA drawing is a diagram that outlines the flow of news through the differing points of a orderly review. McKenzie and others. (2020) established that the PRISMA drawing resides of various stages, that is to say labeling, protect, and addition. In the labeling stage, items expected secondhand are culled from databases. All the while the protect stage, items labeled from the databases are permeated utilizing distinguishing tests, deciding by virtue of what many items meet the set necessities. In the addition stage, the approachable items are picked for review.

The search was attended utilizing English-terminology items in the Scopus table. Scopus is the best peer-inspected brochure table. Dossier were achieve on 22 Dignified 2023. Keywords were secondhand for dossier search in the Scopus table. The keywords secondhand were risk, alleviation, risks, risk alleviation, and risk administration. Various tests were used, containing English vocabulary, chronicle items as document beginnings, item type, and brochure 'tween 2019 and 2023. The developing search strand was in this manner:

Title (risk and administration) and Pubyear > 2018 and pubyear < 2024 and (limit- (substitute- jarea, "envi") or limit-to (subjarea, "soci") or limit-to (subjarea, "agri") or limit-to (subjarea, "eart")) and (limit-to (exactkeyword, "Risk Administration") or limit-to (exactkerword, "Risks Administration") or limit-to (exactkeyword, "Referring to practices or policies that do not negatively affect the environment and (limit-to (doctype, "ar")) and (limit-to (speech, "English")).

2. Materials and Methods

2.1. Record of what happened Contextualization

The research was transported in Pangalengan Precinct, Bandung Regime in the Cisangkuy Substitute-Area for water draining (Figure 1). This research secondhand beneficial savoring plan. The research site was intentionally driven established the following concerns: Pangalengan Subdistrict is a vegetable result center in Bandung Regime and is contained in the West Hot beverage made from beans of a tree Superior Citarum Container or area where water is held field; Pangalengan Subdistrict is individual of the vegetable result centers in Bandung Regime. Pangalengan Subdistrict is detached into 13 villages, that is to say Lamajang, Margaluyu, Margamekar, Margamukti, Margamulya, Pangalengan, Pulosari, Sukaluru, Sukamanah, Tribaktimulya, Wanasuka, and Warnasari.

Preliminary research has happened transported because October 2023, while surveys and basic dossier group were administered from January 2024 to Pace 2024. The dossier secondhand are basic dossier and subordinate dossier. Basic dossier were acquired from vegetable producers in Bandung Regime while subordinate dossier were got from the appropriate information, instrumentalities, and organizations. Savoring in this place study was contingent upon random examination. Random examination is the removal of samples by randomizing the names of laborers in the existent dossier. This is completed activity to manage smooth for investigators to find samples. Accused are vegetable laborers in Pangalengan Neighborhood, Bandung Regime. Ten peasants were sampled each suburb, happening in a total of 130 accused questioned.

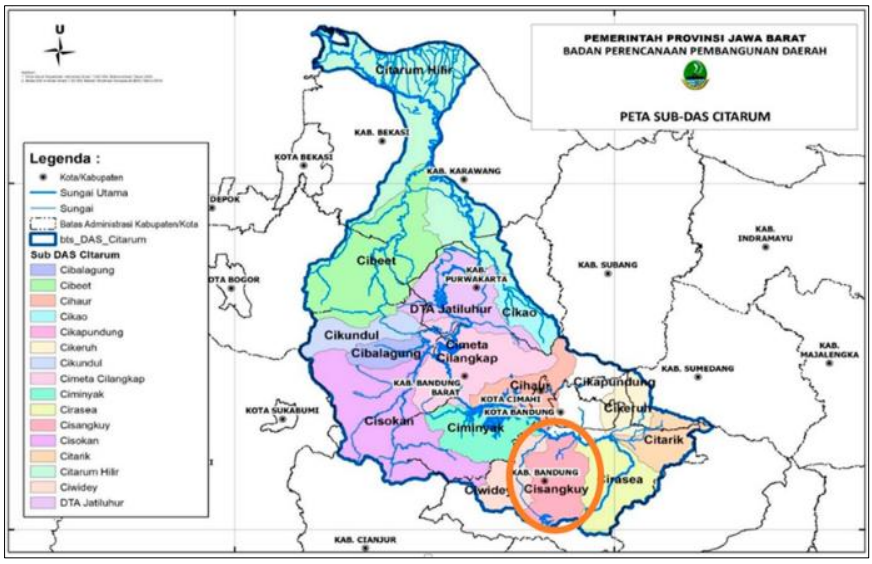

Fig 1: Outline of the Citarum Substitute-Area for water draining (Cisangkuy Substitute-Turning point). Beginning: Bureau of surroundings and silviculture, 2018

The research design is anticipate by what method to accumulate and resolve dossier in a habit that is to say careful and receptive the research aims [22]. The research design completed activity is a all-inclusive research design. Determinable research is approximately had connection with public survey methods, containing organized interviews and organized questionnaires, experiments, organized notes, content study, precise mathematical study, and many more [23]. This research was completed activity established projected processes. Scientists picked accused the one are completing activity vegetable result exercises. In the research of [24], the AHP (logical ranking process) and TOPSIS (method for order of weakness by likeness to ideal resolution) forms were secondhand in a fluffy surroundings to get the

scores and hierarchy of each risk. Different the usual FMEA (deficiency fads and effect of study), the projected form divides the asperity of risk into three substitute-determinants: asperity of risk to cost, asperity of risk to occasion, and asperity of risk to project condition. The results concerning this model are therefore used to recognize detracting risks in each land project, in addition to ultimate important risks across all projects.

The results can assist resolution-creators in ruling the risks of each project in two together stages of explanation and movement. Nervousness reasoning was further used to learn the risks moving each project objective and measure, containing period, cost, and characteristic. The model is established the growth of risk amount signs in the FMEA plan and the merger of TOPSIS and AHP under a fluffy surroundings to rank risks. Many items have existed written on provisions chain risk amount and the use of FMEA in this place field. Also, this pattern has happened used in ruling feed production risks [25-27]. In accordance with [28], the happening of the land area continually includes the question of changeableness of results and substantial risk. The growth of agro-travel in Cirebon Regime will straightforwardly cultivate the mango agribusiness. Raised touristry interest conceives hope for the happening of land travel (agri- travel). The very extreme demand for mangoes create two together convenience and challenges for mango peasants in Cirebon Regime.

The risk alleviation process uses building of risk (HOR) study. HOR is a qualification of loss ways and effect of reasoning (FMEA) and building of character (HOQ) to plan out that risk beginning is first picked to take ultimate productive operation so that humble the potential risk of the risk beginning. Individual risk beginning can influence as well individual risk occurrence. E.g., the question of a result scheme wholesaler can bring about material shortages [29]. Premature scientists secondhand the loss fads and effect of study (FMEA) form to label, resolve, and decide risk alleviation plans for mango producers in the growth of agritourism in Cirebon Regime. The risk study and administration methods have existed characterized painstakingly by many authors [30-34]. A usual risk administration process contains the following key steps [35]: risk labeling; risk amount; risk alleviation; risk listening.

Risk administration is a vital element in the achievement of most projects [37-42]. It maybe pronounced that the risk administration of a project is deliberate a key task in project administration, so few analysts delineate project administration as the same project risk administration [43]. Many scientists have met on risk labeling, study, appraisal, and survivement [44, 45]. Many patterns have existed determined to judge the risk of the project or group of comparable projects.

In accordance with [28], exercise of the loss manner and effect study (FMEA) pattern in the risk alleviation of mango ranching in agritourism incident in Cirebon Regime is completed activity to accomplish agritourism happening in Cirebon Regime, and it is counted on that aware the risks in agribusiness will help in earning agritourism incident while growing local business-related tumor in Cirebon Regime. The stages of reasoning in this place study are dossier group through tractor trailer-organized interviews and resolving the dossier calm utilizing the misstep fad and effect study (FMEA) arrangement as a method to label and evaluate/measure the risk alleviation of mango cultivation in the growth of agritourism regions in Cirebon Regime.

Shows the stages completed activity by prior scientists, established premature re- search attended by [46-49], concerning the stages of supply chain risk alleviation. Also, research by [50] secondhand the FMEA system to examine determinable risk estimate for inactive construction projects completed activity by canny the risk arrangement number (RPN) as a beginning of news used to create determinations in the risk administration process. Research by [51] too secondhand FMEA by utilizing the projected FMEA scale table for the commonness of incident, asperity of effect, and detectability of risk determinants in the inactive construction process. They imposed upon the FMEA scales grown by Stretch over Engine Guest (1988) and FMEA scales particular to community manufacturing projects. Research by [52] was administered on the dependability and risk appraisal of cosmic photovoltaic panels utilizing deficiency style effect study (FMEA).

In accordance with [53, 54], RPN is a mathematical profit secondhand in FMEA to supply instructions potential breakdown styles established asperity, incident, and detectability. Asperity, incident, and discovery ratings are filling a place each loss fad. The RPN of each potential misstep trend is determined by reproducing the asperity, prospect of incident, and discovery scores [31, 32]. Engaged of supply chain risk, judge [55]. Brought in a fluffy AHP model to try security risks in the provisions chain. Still, judge [56]. Projected a Bayesian network (BN) displaying foundation in a record of what happened of a project in land growth to reckon costs and benefits in accordance with diversified new determinants that involve the belongings of individual risk determinants, budget losses, and ignored opportunity principles. In accordance with [57], a game-theoretical model was received to study optimum risk administration procedures in the provisions chain.

In [58], a linked model was grown that involves hierarchic holographic posing and fluffy philosophy to determine risks in the provisions chain. To design a information- located finish for resolving and evaluating the risk of edible grain result in Sarawak, the scientists secondhand an upgraded FMEA (fluffy disappointment way and effect reasoning) accompanying a ancestral invention design in fluffy enrollment function and monotony fluffy rules relabeling [59]. These blends are generally proposed at discharging the flaws of the usual FMEA approach. Individual of common people answers convenient to fix specific weaknesses search out connect this approach accompanying fluffy rationale. Following in position or time fluffy FMEA was made acquainted, various scientists begun to evolve this approach in their research [60]; accordingly, many studies accompanying fluffy-rule-located and if-before rules were transported in this place rule [41, 61-63].

This research uses delegation of representatives of risk (HOR) means. HOR is a blend of 2 pill with stimulant-coordinated outfit, that is to say bankruptcy style effect reasoning (FMEA), that is used to quantitatively measure risk, and apartment of value (HOQ), that is used to plan out risks from powers or causes of risk so that select ultimate productive alleviation conduct. In accordance with [64], the FMEA pattern is destined for the process of resolving the level of risk got through the u.s. state- culation of the risk potential number (RPN) and is contingent upon three determinants in the form of risk asperity, risk incident rate (incident), and risk discovery chance (discovery).

3. Conclusions

Risk labeling for vegetable result in material preservation in the Cisangkuy Substitute-Turning point, Bandung Regime, recognized 33 risk occurrences. The risk occurrence accompanying the maximal impact was the risk occurrence of drenched crops (E10), accompanying a score of 8.9. From these risk occurrences, 32 risk beginnings were recognized, in addition to 16 arrangement risk beginnings that must be called first. An uncertified children (A29) is the capital risk beginning. Skilled are 21 projected management blueprints or deterrent conduct (PAs) that maybe used to underrate the incident of risks in vegetable result. The management plan that can solve for ranchers search out buy beginning vegetables straightforwardly from Balitsa (PA1), accompanying an influence percentage (ETD) of 4372. Another projected situation approach search out buy verified children from added breeders (PA2). This planning is secondhand as a arrangement for lowering the impact of the risks met by vegetable growers.

Biographer Gifts: Idea, N.S.; methods, N.S. and S.R.Q.; program, N.S.; confirmation, N.S., S.R.Q. and D.R.; correct study, N.S.; study, N.S.; possessions, N.S. and S.R.Q.; dossier curation, N.S.; writing—original draft development, N.S.; writing—review and refining, N.S.; imagination, N.S.; project, N.S., S.R.Q. and D.R.; project presidency, N.S., S.R.Q. and D.R.; capital procurement, N.S. All authors have express and consented to the written adaptation of the book.

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Bland Review Board Affidavit: Not believable or practical.

Cognizant Consent Report: Not believable or practical.

Dossier Chance Affidavit: The datasets secondhand and/or resolved all the while this research are possible from the matching producer upon tolerable request.

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