Research title: Studying the relationship between the physical properties of soil and carbon absorption by *Hevea Brasiliensis, Muell.Arg* in the area of Village No. 11, Palian Subdistrict, Palian District, Trang Province, Thailand.

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Abstract

The objective of this research is to study the relationship between soil quality and the amount of carbon absorption of *Hevea Brasiliensis* trees in the area of Palian District, Trang Province. Random soil samples were collected from soil structure at 10 locations in a soil sampling area of 1,600 square meters and used for analysis. physical soil properties Using methods for measuring environmental data according to GLOBE's measurement methods, including soil color, soil texture classification, soil structure, soil cohesion. and used to analyze soil chemical properties, including soil acidity and alkalinity, nutrients N, P, and K in soil, using field soil testing methods and kits. Measurements were made by measuring the height and circumference of the rubber trees, then using the data to calculate the biomass of the *Hevea Brasiliensis* trees and analyze the amount of carbon stored in the trees according to the principles of the allometry equation.

From the study of soil depth in the upper soil area of the *Hevea Brasiliensis* plantation plots, it was found that the soil depth study in the upper area The part has a depth of more than 20 centimeters and has the characteristics of loose soil adhesion. It has a spherical structure. And the color of the soil is mostly dark brown. which is classified as loam soil The average pH was 5.7±0.48, the average soil moisture was 10.35±0.32%, and the average temperature was 29.54±0.62 (°C). From calculating the amount of carbon stored, the results of the study found that the amount of carbon storage in the research area 40x40 square meters has a carbon storage amount of 7,725.47 tons of carbon. In a total area of 4800 square meters, there is a carbon storage amount of 23,176.41 tons of carbon and an average of 103±41.04 tons of carbon per tree.

Keywords: carbon sequestration, *Hevea Brasiliensis*, soil quality

Introduction

Climate change it is considered an important problem that affects the world's population. Due to the increase in the amount of greenhouse gases especially carbon dioxide caused by human activities (IPCC, 2017) such as fuel combustion in industrial, forest burning, transportation, agriculture, which is the main cause of global warming problems and causing the composition of the earth's atmosphere to change.There are many ways to solve the problem such as developing clean production technology , consideration throughout the life cycle Using clean energy and the use of carbon capture and storage technology.Carbon capture and storage is one method that can reduce the carbon dioxide that is released. Not to float up into the earth's atmosphere.The best and most economical method of storage. And the most natural way is to store it in trees and wood products. Trees absorb carbon dioxide from the atmosphere through the process of photosynthesis and accumulate it in the form of bio-mass that the plants will store both above ground and below ground , causing carbon-carbon to be fixed in the trees. Until the trees are cut from the area.

Hevea brasiliensis is considered an important economic crop. Thailand has the second largest rubber plantation area in the world or approximately 2.70 million hectares as a result, *Hevea brasiliensis* plantations in Thailand have become a source of carbon dioxide absorption and It has the potential to store carbon well.Therefore, the researcher is interested in studying biomass. Quantity of carbon storage to calculate carbon absorption in Hevea brasiliensis that is related to the properties of rubber plantation soil in Palian District, Trang Province.The results of the study will be useful and can be used as a guideline for analyzing, planning, and solving various problems in the future.

Objectives of the research

1.To study the amount of carbon absorption by *Hevea Brasiliensis* Area: Village No. 11, Palian Subdistrict, Palian District, Trang Province, Thailand

2.To study the physical quality of soil that affects carbon absorption by Hevea Brasiliensis

Research questions

The physical quality of the soil affects the amount of carbon absorbed by Hevea Brasiliensis Or how?

Research hypothesis

The physical quality of the soil affects the amount of carbon absorbed by Hevea Brasiliensis.

The study area

The study area : The *Hevea Brasiliensis* plantation area at Village No. 11, Palian Subdistrict, Palian District, Trang Province, Thailand. The total plot area has a size of 4800 square meters (3 rai).

latitude: 7.296816

longitude : 99.824064

Picture 1

Picture 2

Picture 1 Because the *Hevea Brasiliensis* plantation which is the area of this study has an area of 4800 square meters (3 rai) (the boundary of the sample rubber plantation is shown in the white line). Therefore, Picture 2, the researcher has selected a random sample point for the study, size 40x40 square meters (1 rai).

The study area

The study was conducted in the *Hevea Brasiliensis* plantation area. The total plot area has a size of 4800 square meters (3 rai). The researcher has randomly selected study sampling points with an area of 1600 square meters (1 rai) in the area of Village No. 11, Palian Subdistrict, Palian District, Trang Province, Thailand. The study was conducted on the 24th. February 2024 during the time 8:00-11:00 a.m.

GLOBE Protocol

1. Biosphere

2. Pedosphere (Soil)

Methods and materials

1. Research preparation step

1) Set the issue to study. and choose the topic you want to study

2) Study and collect knowledge and theories related to research.

3) Set the objectives of the study.

4)) Set sampling points in the study area.

2.Research process

2.1 The process of measuring the height of Hevea Brasiliensis trees according to GLOBE.

1) Check the height of Hevea Brasiliensis trees in an area of 40 x 40 square meters and using a clinometer to measure the height.

2) Select the tree whose height you want to measure. Move the distance between the observers to a considerable distance from the base of the tree and record the distance from the observer to the base of the tree.

3) Measure and record the height from the observer's eye level to the ground.

4) Look through the plastic tube on the clinometer to the tip on top of tree. A string attached to a metal nut or ring will fall due to the force of gravity, creating an angle of elevation. Make a note of the angle of elevation.

5) Calculate the average of the elevation angles of the Hevea Brasiliensis from all measurements.

6) Calculating the height of a tree according to the formula Tan = BC/AC

7) Calculated using trigonometry: Height =((TAN value) x AC)) + (Observer's height from floor to eye level)

2.2 Steps for determining biomass

2.2.1 Process for measuring the diameter of Hevea Brasiliensis trees.

1) Use a tape measure to measure 1.3 meters from the base of the tree up to chest level.

2) Measure the circumference of the trunk with a measuring tape.

3) Calculate the diameter of the Hevea Brasiliensis tree.

2.2.2 Calculation of biomass

Assessment of Above Ground Biomass (AGB) by allometry equations used to evaluate carbon storage in the biomass of certain tree species grown at the Phu Phan Development Study Center due to the Buddha image. Ratchadamri Sakon Nakhon Province (Pradit Treepattana et al. (2008)

$$WS = 0.0804 (DBH2H) 0.8341$$

$$WB = WT - WS - WL$$

$$WL = 0.000008 (DBH2H)1.4986$$

$$WR = 0.0005 (DBH2H)1.269$$

$$Wr = 0.0022 (DBH2H)1.0296$$

$$WT = 0.0046 (DBH2H)1.2046$$

By

WS = Above-ground biomass in the stem (kg)

WL = Above-ground biomass of leaf (kg)

WB = Above-ground biomass in branch sections (kg)

WR = Root biomass (kg)

Wr = Biomass of fine roots (kg)

WT = Biomass of the trunk + branches + leaves (kg)

D or DBH = Chest diameter (centimeters)

H = Height (meters)

The biomass value of each part of the rubber will be calculated as the sum of the biomass.

2.3 Procedure for calculating underground biomass.

Belowground Biomass (Belowground (root) biomass, RB) Use the equation of Cairne et al. (1997) Belowground Biomass = 0.28 x Total biomass of trees

$$GB= AGB + BGB$$

by means of

GB = Biomass including plants (kilogram)

AGB = Aboveground Biomass (kilogram)

BGB = Belowground Biomass (kilogram)

2.4 Steps for quantifying carbon storage

Intergovernmental Panel on Climate Change (IPCC, 2006) It has been determined that approximately 47 percent of a tree's biomass is carbon. Therefore, the equation is as follows.

$$C = GB \times 0.47$$

By C is The amount of storage of the benefits of Hevea Brasiliensis The unit is tonnes of carbon. ;

GB is the amount of biomass including the plants. The unit is kilograms.

2.4 Calculating the total carbon sequestration in an area

Step 1 Calculate the total amount of carbon storage in each survey plot according to the above guidelines. (Units are tons of carbon)

Step 2 The amount of carbon storage of each survey plot was averaged. (Units are tons of carbon per rai)

Step 3 Calculate the amount of carbon storage as in the equation

Total carbon storage = average carbon storage x total forest area

2.5 Procedure for calculating carbon adsorption

Carbon adsorption amount = total carbon storage value x 3.66

By combining the carbon storage values of every tree in an area of 40x40 square meters (1 rai) and calculating the total carbon absorption in an area of 40x40 square meters (1 rai), the unit is kilograms of carbon (kgC).

2.6 Steps for studying physical factors

2.6.1 Check the quality of the soil by studying the soil in all 10 areas according to the method of GLOBE

1) How to measure soil structure

1. Collect soil samples by various methods. used to study soil characteristics and record basic data such as environmental conditions

2. Place a sample of undisturbed soil on your hand. Observe the soil in your hands in detail and observe the structure of the soil. The soil structure has many forms, as shown in the soil structure diagram.

3. Measure the size, shape and record the data in the data sheet from the soil measurement.

4. Frequency of data collection: 1 time at each study point.

2) Measuring soil elongation

1. Take soil pellets from the top layer of soil. If the soil is dry, moisten the soil layer by spraying water. Then pull out the soil pellets and observe the elongation of the soil.

2. Pick up a pellet of soil between your thumb and forefinger and gently squeeze the pellet until it breaks into pieces.

3. Record the characteristics on the data sheet.

3) How to measure soil color

1. Take a soil pellet from the soil sample in each layer and observe it and record in the data sheet whether the soil pellet is moist, dry, or wet. If it is dry, moisten it slightly with water from the prepared bottle.

2.Crush the soil into 2 parts.

3.Stand with the sunlight shining on the soil color chart and the soil sample being measured.

4. Record the soil color value in the data record sheet.

4) How to check soil moisture

1.Soil samples were collected at depths of 0-5, 10, 30, 60, and 90 cm, at least 3 samples at each point.

2.Label the details of the soil sample.

3. Weigh the clay before baking.

4.The soil samples were baked at 95-105 ° C for 24 hours.

5. The weight of each soil sample was measured after baking. Then calculate the humidity value.

5) Measuring the acidity - baseness of the soil with a pH meter or pH paper.

1.Weigh 20 grams of the dry and sieved soil sample and pour it into a beaker.

2. Add 20 or 100 milliliters of distilled water to get a soil: water ratio of 1:1.

3.Use a glass rod to stir the clay for 30 seconds, then take the water and leave it for 3 minutes. Do this 5 times.

4. After 5 times, put it away. Until the soil in the beaker settles, you will notice clear water at the top.

6) Measuring soil temperature by comparing it with a standard thermometer.

1. Pour approximately 250 ml of room temperature water into the beaker (keep the water level in the beaker higher than 4 cm to keep the soil thermometer sensor submerged in the water during calibration).

2. Immerse a standard thermometer and a soil thermometer into the water, then wait 2 minutes.

3. Read temperature readings from standard thermometers and soil thermometers. If the temperature read Less than 2 degrees Celsius difference indicates that the thermometer has been calibrated.

4. If the temperature readings differ by more than 2 degrees Celsius, wait another 2 minutes.

5. If the temperature readings still differ by more than 2 degrees Celsius, adjust the nut located. the bottom of the soil thermometer dial with a wrench until the thermometer reads. The two are close together.

Analysis and summary of research results

The received information is analyzed and compared. Using statistics to analyze the data, including the amount of carbon storage Biomass value and then use the data to calculate the amount of carbon absorption of *Hevea Brasiliensis* trees. Including collecting data on humidity and temperature of physical factors Soil structure and soil pH to summarize the results as a bar chart. and summarized as research results

Results and data

1.Results from studying the height and trunk circumference of *Hevea Brasiliensis* trees.

From examining 75 rubber trees in an area of 40 x 40 square meters (1 rai), studying the height and using the circumference width of the trees to calculate the diameter as follows:

Table 1 shows the height and diameter of the *Hevea Brasiliensis* tree.

Number	Height (m.)	Diameter (cm.)
1	16.76	28.33
2	13.54	18.14
3	5.95	9.87
4	16.19	21.33
5	14.57	20.69
6	13.54	19.74
7	13.54	16.87
8	13.04	22.28
9	13.04	23.55
10	17.33	16.87
11	15.64	19.10
12	16.19	25.15
13	14.57	20.37
14	13.04	14.96
15	15.64	21.65
16	19.16	14.00
17	15.64	17.50
18	16.76	17.50
19	16.76	20.05
20	17.93	21.65
21	14.57	13.37
22	15.64	15.28
23	17.33	20.05
24	16.19	15.92

25	15.64	22.28
26	7.61	8.59
27	16.19	20.37
28	12.55	13.69
29	16.19	21.33
30	16.19	21.33
31	16.76	21.65
32	17.93	24.51
33	17.33	23.24
34	16.76	19.10
35	17.33	16.23
36	17.33	20.37
37	16.76	23.56
38	14.57	20.05
39	16.76	22.60
40	15.10	20.37
41	7.61	9.55
42	14.57	20.69
43	15.64	20.37
44	13.04	14.96
45	16.19	21.65
46	16.76	15.92
47	16.19	17.51
48	15.64	24.51
49	17.33	23.56
50	14.57	21.65
51	17.33	20.37
52	14.57	13.69
53	16.76	21.65
54	16.19	20.37
55	16.19	16.23
56	15.10	20.37
57	14.57	16.87
58	13.04	21.65
59	15.64	24.51
60	12.55	14.32
61	14.63	17.83
62	15.08	18.46
63	16.20	19.09
64	15.08	16.55
65	14.63	17.18
66	17.33	22.28
67	18.00	25.78
68	16.21	24.82
69	15.53	21.32
70	15.53	23.87
71	16.65	22.28
72	18.00	26.73
73	14.63	18.46
74	15.08	21.64
75	16.65	23.23

From Table 1, it can be concluded that in an area of 40×40 square meters, most rubber trees have a height of 5.95-19.16 meters and a diameter of 8.59-26.73 centimeters.

2. Results of the study of biomass and carbon storage of *Hevea Brasiliensis* trees.

Table 2 shows the biomass and carbon storage values of *Hevea Brasiliensis*.

Number	Different parts of biomass (kg.)					Total biomass (kg.)	Carbon storage amount (kg)
	trunk	branch	leaf	Aerial soil	subterranean		
1	281.51	62.39	9.40	353.29	95.39	448.68	210.88
2	100.45	20.00	3.88	124.33	33.57	157.90	74.21
3	14.97	2.45	0.61	18.03	4.87	22.89	10.76
4	160.46	33.54	5.91	199.91	53.98	253.88	119.33
5	137.43	28.27	5.16	170.86	46.13	216.99	101.98
6	117.51	23.78	4.48	145.78	39.36	185.14	87.01
7	87.70	17.22	3.43	108.34	29.25	137.59	64.67
8	142.30	29.37	5.32	176.99	47.79	224.77	105.64
9	157.84	32.94	5.82	196.60	53.08	249.69	117.35
10	110.40	22.20	4.23	136.84	36.95	173.78	81.68
11	126.46	25.79	4.79	157.03	42.40	199.43	93.73
12	218.22	47.09	7.66	272.97	73.70	346.67	162.94
13	133.51	27.38	5.02	165.92	44.80	210.72	99.04
14	67.67	12.93	2.69	83.28	22.49	105.77	49.71
15	159.72	33.37	5.88	198.98	53.72	252.70	118.77
16	85.67	16.78	3.35	105.80	28.57	134.37	63.15
17	107.50	21.55	4.13	133.19	35.96	169.15	79.50
18	114.67	23.15	4.38	142.20	38.39	180.59	84.88
19	147.74	30.62	5.49	183.86	49.64	233.50	109.74
20	181.44	38.41	6.56	226.42	61.13	287.55	135.15
21	60.84	11.50	2.43	74.76	20.19	94.95	44.63
22	83.39	16.28	3.27	102.94	27.79	130.74	61.45
23	152.42	31.69	5.65	189.76	51.24	241.00	113.27
24	92.94	18.35	3.62	114.91	31.03	145.93	68.59
25	168.60	35.42	6.16	210.19	56.75	266.94	125.46
26	14.55	2.37	0.60	17.52	4.73	22.25	10.46
27	147.31	30.52	5.48	183.32	49.50	232.81	109.42
28	55.31	10.35	2.21	67.87	18.32	86.19	40.51
29	160.46	33.54	5.91	199.91	53.98	253.88	119.33
30	160.46	33.54	5.91	199.91	53.98	253.88	119.33
31	170.37	35.83	6.22	212.43	57.35	269.78	126.80
32	228.81	49.62	7.96	286.40	77.33	363.72	170.95
33	200.65	42.93	7.15	250.73	67.70	318.42	149.66
34	134.89	27.69	5.07	167.65	45.26	212.91	100.07
35	102.76	20.51	3.97	127.23	34.35	161.58	75.94
36	156.97	32.74	5.79	195.50	52.79	248.29	116.69
37	199.49	42.65	7.11	249.25	67.30	316.55	148.78
38	129.65	26.51	4.89	161.05	43.48	204.53	96.13
39	184.66	39.17	6.66	230.49	62.23	292.72	137.58
40	138.04	28.41	5.18	171.62	46.34	217.96	102.44
41	17.71	2.94	0.72	21.38	5.77	27.16	12.76
42	137.43	28.27	5.16	170.86	46.13	216.99	101.98
43	142.64	29.45	5.33	177.42	47.90	225.32	105.90
44	67.67	12.93	2.69	83.28	22.49	105.77	49.71
45	164.96	34.58	6.05	205.59	55.51	261.10	122.72
46	95.99	19.02	3.72	118.73	32.06	150.79	70.87
47	111.03	22.34	4.26	137.62	37.16	174.78	82.15
48	201.42	43.11	7.17	251.70	67.96	319.66	150.24
49	205.81	44.15	7.30	257.26	69.46	326.72	153.56
50	149.51	31.02	5.55	186.08	50.24	236.32	111.07
51	156.97	32.74	5.79	195.50	52.79	248.29	116.69
52	63.57	12.07	2.53	78.17	21.11	99.27	46.66
53	170.37	35.83	6.22	212.43	57.35	269.78	126.80

54	147.31	30.52	5.48	183.32	49.50	232.81	109.42
55	96.44	19.12	3.74	119.30	32.21	151.51	71.21
56	138.04	28.41	5.18	171.62	46.34	217.96	102.44
57	93.91	18.57	3.65	116.12	31.35	147.47	69.31
58	134.80	27.67	5.07	167.54	45.24	212.78	100.01
59	201.42	43.11	7.17	251.70	67.96	319.66	150.24
60	60.20	11.36	2.40	73.97	19.97	93.94	44.15
61	104.47	20.88	4.03	129.38	34.93	164.31	77.23
62	114.73	23.16	4.38	142.28	38.42	180.70	84.93
63	130.68	26.74	4.93	162.34	43.83	206.18	96.90
64	93.58	18.50	3.64	115.72	31.24	146.96	69.07
65	97.61	19.38	3.78	120.77	32.61	153.38	72.09
66	185.54	39.37	6.69	231.60	62.53	294.14	138.24
67	252.40	55.30	8.62	316..32	85.41	401.73	188.81
68	213.34	45.93	7.52	266.79	72.03	338.82	159.25
69	154.35	32.13	5.71	192.19	51.89	244.08	114.72
70	190.51	40.54	6.84	237.89	64.23	302.12	142.00
71	178.74	37.78	6.48	223.00	60.21	283.21	133.11
72	270.12	59.60	9.10	338.83	91.48	430.31	202.25
73	111.54	22.45	4.27	138.26	37.33	175.59	82.53
74	154.38	32.14	5.71	192.23	51.90	244.14	114.74
75	193.30	41.19	6.92	241.42	65.18	306.60	144.10

From Table 2, it can be concluded that in an area of 40×40 square meters, most *Hevea Brasiliensis* trees have total biomass in the range of 22.25 - 448.68 kilograms and the amount of carbon storage will be in the range of 10.46 - 210.88 tons of carbon.

3. Results of the study of the amount of carbon storage in the entire area.

Table 3 shows the amount of carbon storage of *Hevea Brasiliensis* trees in the research area of 40x40 square meters (1 rai) and the total area of 4800 square meters (3 rai).

The size of the area (m^2).	Carbon sequestration volume (tons of carbon)	Average (tons of carbon/plant)
40x40	7,725.47	103±41.04
4800	23,176.41	

From Table 3, it can be concluded that the carbon sequestration volume of the researched area is 40x40 m2. It has a carbon sequestration volume of 7,725.47 tons of carbon. Carbon sequestration volume in the researched area 4800 m2. It has a carbon sequestration volume of 23,176.41 tons of carbon and an average of 103±41.04 tons of carbon per tree.

4. Results of the study of the amount of carbon absorption in the entire area.

Table 4 shows the amount of carbon absorption by *Hevea Brasiliensis* trees in the research area of 40x40 square meters (1 rai) and the total area of 4800 square meters (3 rai).

Biomass value (kg)		Carbon adsorption amount (kgC)	
Area 40x40 square meters	Area 4800 square meters	Area 40x40 square meters	Area 4800 square meters
219.17	657.51	28,275.22	84,825.66

From Table 4, it can be concluded that the amount of carbon adsorption in the research area 40x40 square meters has a biomass value of 219.17 kilograms, a carbon adsorption amount of 28275.22 kilograms of carbon, and a total area of carbon adsorption of 84825.66 kilograms of carbon.

5.Results of the study of physical factors

Table 5 shows the physical factors of soil.

Study Point	Soil structure characteristics	color of soil	soil adhesion	pH value	soil moisture value (%)	soil temperature (°C)
1	round lumps, clay loam, silty sand		tight	6	10.1	29.9
2	Square lump, clay loam mixed with silty sand		Very tight	5	10.2	30.2
3	round lump, loam		crumbly	6	10	28.5
4	round lump, loam		crumbly	6	10.4	29.3
5	round lump, loam		crumbly	6	10.7	30.0
6	round lumps, clay loam, silty sand		tight	5	10.8	29.0
7	round lumps, clay loam, silty sand		tight	6	10.4	28.8

8	round lump, loam		crumbly	6	10.1	29.5
9	round lump, loam		crumbly	6	10	30.2
10	round lumps, clay loam, silty sand		tight	5	10.8	30.0
average				5.7±0.48	10.35±0.32	29.54±0.62

From Table 5, it can be concluded that the results of the random inspection in all 10 areas can be concluded that Most of the soil areas have loose soil adhesion characteristics. It has a spherical structure. And the color of the soil is mostly dark brown. which is classified as loam soil The average pH was 5.7±0.48, the average soil moisture was 10.35±0.32%, and the average temperature was 29.54±0.62 (°C).

Table 6 shows the amount of nutrients in the soil.

Study point	The amount of nutrients in the soil (mg/kg)		
	Phosphate	Nitrogen	Potassium
1	1	1	2
2	0	1	3
3	1	1	4
4	0	0	1
5	0	1	3
6	0	0	1
7	1	1	4
8	1	1	3
9	0	0	1
10	0	0	1
average	0.4±0.52	0.6±0.52	2.3±1.25

From Table 6, it can be concluded that the nutrients in the soil The amount of phosphate was 0.4±0.52 mg/kg, the amount of nitrogen was 0.6±0.52 mg/kg, and the amount of potassium was 2.3±1.25 mg/kg.

Conclusion

From research, it was found that *Hevea Brasiliensis* has a lifespan of 15 years in an area of 40x40 square meters. The height of the *Hevea brasiliensis* will be 5.95-19.16 meters with a diameter of 8.59-26.73 centimeters, which will have total biomass in the range of 22.25-448.68 kilograms, resulting in the amount of carbon storage in the range of 10.46-210.88 Kg and there is a carbon absorption amount of 28275.22 kilograms of carbon per rai. Therefore, the amount of carbon absorption of the entire plot of land size 3 rai is 84825.66 kilograms of carbon. Moreover, the results from random inspections in all 10 areas can be concluded that most of the soil areas have loose soil adhesion characteristics. It has a spherical structure. And the color of the soil is mostly dark brown. which is classified as loam soil The average acidity - base was 5.7±0.48, the average soil moisture was 10.35±0.32%, and the average temperature was 29.54±0.62 (°C) and the nutrients in the soil The amount of phosphate was 0.4±0.52 mg/kg, the amount of nitrogen was 0.6±0.52 mg/kg, and the amount of potassium was 2.3±1.25 mg/kg, which soil properties were suitable for the growth of Hevea brasiliensis.

Discussion

Hevea brasiliensis trees that are 15 years old in the area of Village No. 11, Palian Subdistrict, Palian District, Trang Province, Thailand have a total biomass in the range of 22.25-448.68 kilograms. They can store carbon in various parts of the tree up to a maximum of 28.27 tons/rai, consistent with the assessment. Carbon content from rubber biomass throughout the rubber life span of 25 years. It was found that the estimate could be equal to 139.66 tons/ha (22.35 tons/rai), which is close to the carbon storage evaluation results. From the biomass values in other rubber trees at the age of 25 years are 128.40 tons/ha (20.54 tons/rai) (Supawan Petsri and Amnat Chidthaisong, 2010) and 139.94 tons/ha (22.39 tons/rai) (Arak Chanthuma et al., 2008). As for the total amount of carbon in *Hevea brasiliensis* plantations over the lifespan of 1-25 years, it can be estimated to be in the range of 50.68-193.72 tons/ha or 8.11-30.99 tons/rai. From the results of this evaluation it shows that *Hevea brasiliensis* plantations are a source of absorption. Absorbs carbon dioxide and stores potential carbon throughout the life of the *Hevea brasiliensis* plantation.

Some properties of the soil of a 15-year-old *Hevea brasiliensis* plantation in the area of Village No. 11, Palian Subdistrict, Palian District, Trang Province, Thailand. Most of the soil area (depth 20 cm.) has a loose soil adhesion characteristic. It has a spherical structure. And the color of the soil is mostly dark brown. which is classified as loam soil There is an abundance of both nitrogen less phosphorus and potassium result in a carbon storage amount of 28.27 tons/rai. When compared with soil from a 5-year-old *Hevea brasiliensis* plantation, it was found to have high levels of clay particles, nitrogen, and organic carbon. Especially at a depth of 0-25 cm. Therefore, the total amount of carbon storage in the soil is higher than in other age periods. And if considering only the 26-year-old *Hevea brasiliensis* plantation, it was found that the amount of carbon in the soil was 46.62 tons/ha (7.46 tons/rai) (depth level 25 cm). This is similar to the results of other studies, which is 49.00 tons/ha (*Hevea brasiliensis* plantation soil, depth 30 cm.) (Arak Chanthuma et al., 2008). Carbon accumulation in *Hevea brasiliensis* plantations may be different. available in each planting area according to weather conditions or soil health in each region especially the effects of drought conditions (Wauters *et al*., 2008) The amount of carbon stored in the soil is

related to the amount of nitrogen in the soil. or may vary according to various factors such as decomposition activities of microorganisms in the soil (Zhang & Zhang, 2003) Soil tillage (Al-Kaisi *et al*., 2005) companion planting (Zhang *et al*., 2007).

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This research studies the evaluation of carbon absorption for the greenhouse gas reduction mechanism of *Hevea brasiliensis*. And various factors that affect the growth of Hevea brasiliensis in Palian District, Trang Province, Thailand. This success was due to good advice.

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OPTIONAL BADGES

I am a collaborator

There are 3 members in our group. We have a good group process for working, planning, studying, dividing duties and visiting places. Help analyze data together and adhere to the same ideology. Until our research is complete

I am a data scientist

From the data that studied the amount of biomass Carbon adsorption amount and soil quality were used to analyze the data. The obtained values are averaged and tabulated. Data are interpreted from standard values. and be able to summarize the research questions

We make an impact

Thailand emits a lot of carbon emissions. and most people work in agriculture Therefore, we study the amount of carbon absorption. To inform the villagers and demonstrate the benefits of the *Hevea brasiliensis* tree.