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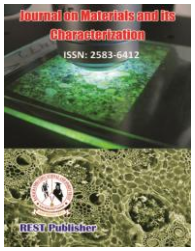


# Agricultural Soils Using TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) Method

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**Abstract**. *Agricultural soil science is a branch of soil science; it is food and fiber related to production regarding edaphic conditions deals with research. In this context, it is a department of agriculture component, thus soil agriculture also described as 19 yenfor the development of pedology in the century formerly, agricultural soil science (or edaphology) of soil science it was a single branch. 2006 yes as per the year, the soil of their agricultural potentialfor viewing purposes only bias of early soil science,as of 2006, pedagogy of the soil science professionand in popular settings defines. And nutrients. Soils have their chemical and heavily in physical properties differs. Leakage, weather and microbial activity such processes are various create different soil types. complete agricultural soil science follows the pattern. Terrain integrating ecosystems partly soil is examined, but manageable nature also recognized as resource. Agricultural soil science, soils chemistry, physics, biology and mineralogical composition as related to agriculture examines. Agricultural soil scientists use soil improve and diet and increases productivity of fiber crops develop methods. Soil for the importance of sustainability continued emphasis is given. Soil erosion, compaction, fertility such as depletion and contamination soil erosion continue to be intense are concerns. They are irrigation and drainage, tillage, soil classification, plant nutrition, soil fertility and other areas conducting research. Plant (and thus animals) produce maximization is the right goal however, sometimes it isit can come at a high cost, though is immediately apparent(produced by monoculture massive crop disease) or long periodic (eg chemical fertilizers and effects of pesticides on humans in health). A farmer soil scientist, sustainable methods and using solutions productivity can be increased come up with a plan, they are farmers to do that science, physics, chemistry, biology, meteorology and geography many sciences including have to look at the fields. ideal solution (TOPSIS) is prioritized through unity is a technique that provides, this is a multi-criteria decision analytical method. TOPSIS stands for (PIS). Short geometric distance alternative to select is the positive ideal solution; basically distance to have ideal solution of thought (nis) negative too long from is geometry. Of TOPSIS the assumption is even greater is, is coming or going the criteria are the same are increasing. Many parameters in scaling problems or criteria often improper dimensions normalizations due to having are generally required. Alternative taken as clay, sandy, silty, peaty, chalky and loamy. Evaluation preference taken as arsenic (As),cadmium (Cd),copper (Cu), mercury (Hg). From the result it is seen that* peaty *is got the first rank where as is the silty is having the lowest rank.*

***Keywords:*** *Sandy, Silty and TOPSIS method*

## 1. INTRODUCTION

Deforestation, serious agricultural production, land resources for non-permanent purposes by constant use corrosion caused, lower productivity and poor water quality by many global ecosystems systems are down. Biology of these systems diversity is changing. Microbial diversity, soil and plant quality and environmental sustainability between to measure beneficial relationships little research has been conducted. Mostly a function of the environment by soil microbial dynamics managed. Microorganism properties and soils in activities differences are reported, but they are common ecosystems computational methods or for operational levels limited, they are describing something specific are limited in capacity [1]. Section of the Kyoto protocol in agricultural soils under 3.4 carbon sequestration responsible. Of accountability measures with identification and measurements key challenges involved not yet answered, this has political implications to be taken. Here, for carbon accounting as one of the prerequisites, of Europe by 2008-2012 carbon in agricultural soils technology for deployment and economically potential business opportunities against the usual situation are analyzed [2]. In agricultural soils, net $Co_2$ reducing emissions is soil c to increase savings similar, it is usually c referred to as

sorting. Productivity in agricultural systems of biomass produced bulk (i.e., food, as fodder or fuel unused area) soil via the disruptor community by going to agricultural land between the atmosphere and amount of total co2 fluxes large - multiple pg year. However, plant enters the soil as residues photosynthetically-stabilized of co2 and from decamp for exposed co2 the net difference between very small. This difference net c balance of the environment determines, that is, thisal though a source of co2 or drowning [3]. Agricultural soil, their own most of the carbon stocks understated, significant coz has the ability to sink. In the next 50-100 years about this immersion ability global estimates are 20-30 pg c will be at the level of for making soil c management practices input of organic matter to soil should increase and/or decomposition of soil organic matter rates should be reduced. So much for increasing soil cappropriate management practices environmental and socioeconomic depending on both factors, varies regionally. In temperate regions, major strategies in crop rotation perennial fodder (n-fixing (including species) increasing, retention of crop residues and reduction of tillage or deletion (Absence of) are included. North america and in europe, marginalarable land is perennial transform into plants, fragilesoils and landscapes protecting and/or reducing agricultural surpluses, extras for c sorting offers opportunities[4]. Physical properties and water with penetration and root growth their relationship, plant growth chemical factors affectingand plant nutrition in four subsequent chapters comprehensive treatment is provided. Astringency, acidity, saltiness and such as nutrient availability problems are solved. This chapters are well referenced being more informative i found, but ordinary readers have so many details the question is whether they will like it wake up administrative issues in the next three chapters are fully discussed.Chief among these is itching control, site erosion effectsand herbicide movement and persistence in soil deals with [5]. Silicon (si) in agricultural soils our current availability comprehension is reviewed knowledge gaps are highlighted.Silicon is an essential plant a benefit over feed and for its useyield answers rice and si-accumulating like sugarcane often demonstrated in crops. These crops are usually high in weathered (dry) soils the soil where they are grown the lower the solution si concentration. A variety of biological (plant pathogens, insect pests)and abiotic (water deficit, excess salts, metal toxicity) same for stressors plant tolerance in time yield as a result of increasing an increase occurs[6]. Soil organic matter (som) is it's a complex mix, though many soil properties and impact on nutrient cycling causes, and land application, soil type, climate and by plants impact in type and quantity causes som in soil concentrations are high and lowif permitted, soil physics degradation and soil in propertiesdue to reduced nutrient cycling patterns agricultural productivitysignificantly affected there is concern. It is soil for standard useclear implications contains of england sustainability of agriculture from the standpoint we we have focused our discussion on because it's good for us know, but similar worries elsewhere in the world equally valid[7]. Soil organic matter (som) is it's a complex mix, though many soil properties and impact on nutrient cycling causes, and land use, soil type, climate and also by plants also affects size. Som concentrations in soil are high if allowed to decrease, the soil deterioration in physical properties and soil nutrient cyclingdue to the decrease in methods of agriculture energy productivity will suffer there is considerable concern that it is soil stable clear implications for use contains of england sustainability of agriculturefrom the standpoint we we have focused our discussion onbecause it's good for us know, but similar worries elsewhere in the world equally valid. Som different 'important' of in soils at different concentrations soil different behaviors scientists hope however, an important limitation is 2%. Soil organic carbon (soc) (ca. 3.4% som)it is widely believed that, a steep decline below that occur in soil quality [8]. Most occur in soil summary of key events affects status. In which heat, conveyance of water and gases contents and proportions and soil strength including these are all and biological reaction saffect the compression process and methods of measurement are described. However, from the applied mechanical stress bulk density, void ratio or in porosity to compare changes in different types of worlds soils no detailed study not done. Of this thesis purpose, widely varied compression curves for soils presenting, agricultural soil compression curves with properties corresponding and used of compression from compression quantifies and describes introducing methods[9]. Photosynthetic plants landscape or maybe aquatic. The process of photosynthesis is selection of plant species, nutrient utilization and other soils and environments by removing obstacles managed, thus can increase npp and total environmental carbon upgrade the pool. 20 second century half of global agriculture a quantum in production to bring progress nutrition of terrestrial plants was due to management. However, in aquatic biology in atmospheric co2 sequestration impact of marine fertilization a debatable issue andis endlessly optional[10]. Back from America as a result of soil burning again high levels of carbon c, historically, fires have been widespread grasslands, open wood lands and in north american grasslands there are agricultural crop residues. For example, Australia and in soil from germany collins reported. This in the study, (1990) “occasionally due to drought, more temperature and strong winds, variety of north America long term in agricultural areas from research project stop five american soils selected. Charcoal ccontent in grasslands assessed, physical separation, high-energy photography andof stability of fire each using the combination a better environment for igniting the soil provides collins (1990) also oxidation and solid state 13cnuclear magnetic resonance (nmr) spectroscopy concluded- “Indians often that they are doing droscopymost of the evidence suggests that abode in these five lands for modification, since 1.8coal c, measuring 53 m, measures 53 mor to attract wild game measured grassland fires"the human 13.6 gm "fires caused by c"show 1 kg of soil and in soil total organic c activity up to 35% or otherwise, historically often

com(toc) is scanning electron disturbance in microscopic grasslands being a charcoal acolyte of the regime showed. It is a real plant may have morphology such as,but blockage and breakdown may have occurred, so thisinheritance of frequent edges is expected. These particles are australian and separated from german soilsimilar in morphology. Effects of this material are combustionis of significant magnitudeis existence, it is microbiology should be highly resistant to decay, in the soil under this process for charcoal in the soil c cycle is discussed[11]. Soil carbon in croplands biogeochemical study to do, soil c and current of n dynamics the model is plant growth sub-sampling and cropping practical procedures (formation, irrigation, tillage, crop rotation and composting amendments). Added extra. New the model is short term (1-9 years) degradation tests, seasonality of soil co2 respiration method and long-term (100 years) of soil carbon storage for mechanics validated against field results.Continuous sensitivity flows soil organic carbon (soc) different in ordering impact of agricultural practices investigated. Corn (maize)tests for lands common soils of america and climate levels were simulated. [12]

## 2. MATERIALS & METHODS

***Clay:***clays are clay minerals (hydrous aluminum phyllosilicates, kaolin, containing al2si2o5(oh)4). A type of fine natural soilis the subject. Clay particles surrounding water molecules because of the film, wet plasticity when present forms, but on drying or stiff when fired, brittle and plastic becomes non. Most pure clay minerals are white or are pale in color, but natural clay various from impurities shows colors, that means a small amount of ironred from the oxide or brown color. A lot of clay ancient ceramic material. Prehistoric humans' useful properties of clay finding and making pottery they used it. Early pottery fragments dated to some clay paper makin, cement manufacturing and chemical distillation many modern industries like used in processes.Half of the world's population two-thirds of the populationin buildings made of clay live or work they do, mostly with bricksare fired, its load it is an essential part of the bearing structure.

***Sandy:***Sandy soil for growing vegetables good because it drains better and it heats up well. Unlike clay soils, it is its nutrients do not keep, so gardeners' additional elements throughout the season have to be added. For starters, compost, compost or grass clippingsyou might add, it's yours can improve sandy soil. Globally particularly dry and in semi-arid regions sandy soil is about 900 million it has an area of hectare. Of sandy soil under cultivationthere are extensive areas, however soil fertility is often low is and soil organic depends on the amount of carbon (soc). Here, pedan databases, data from the literature and three detailed case studies around the world using soc level of sandy soil in we review. Five from major databases bedons were selected,and pedons in the top 30 cm at least 850 grams of sandwas kg−1. Sandy soils in all climates and in many soil typesmainly alfisols, entisols, inceptisols, spodosols, ultisols occur.

***Silty:***When the soil is moist slippery, grainy or not rocks. Soil sedimentation if more than 80 percent soil can be called sediment. Alluvial deposits are compacted, press the grains together while, like siltstone rocks are formed. Water and rocky with icecorroded, or worn-out sediment builds up as it goes. Irrigation at 40% asmt level 30/90 cm apart plant in paired rows autumn by doing maximum sugar from sugar cane conclusion that yield will be obtained done thus, autumn by flooding the sugarcane cropirrigation is traditional compared to method, respectively10 and 24% irrigation water sand clay and silty claystored in soil. Pakistan and in other developing countries, more increasing with population rate incoming surface water sources as it declines, so does science apply this knowledge to sugarcane on the farm between use and more to narrow the gap a determined effort is required.

***Peaty:***Peat is a soil the surface is the organic layer, it is partially decomposed organic matter contains items, it is mostly herbalderived from materials, it is water retention, oxygen deficiency,high acidity and nutrition of conditions such as deficiency accumulated under. In the lowland humid tropics, peat is mostly rainforest from trees leaves, branches,trunks and roots stableof annual high temperature is obtained under other geographiesin areas, water-saturated from other types of plants that can growcharcoal may form. For example, of the peat restonaceae in new zealand composed of members, at the same time tropical coastalin peat mangrove on the edges is formed. A new kind of charcoal may still be found.

***Chalky and Loamy:***soil erosion by water is many a growing problem in soil there is, especially sand, silt and in calcareous soils, continuously in arable land cultivated, and their organic matter less than 2% has such is the splash of rain causing soil to close and heavy rains to soak into the soil instead it exits immediately. There may also be panning problems. In sloping fields (esp in large fields) erosion is intense there will be cultivation lines, crop rows, tramlines etc. In the direction of slope running, more wheels are compressed. In this context, during wet weather or thunderstorms in heavy rain, one-meter-deep deep grooves up to and cut ditches in the fieldsup to 150 tons of soil per hectare can be washed. Sometimes crops washed from the upper slopes under a field with soil closed at the end. Tractor to adjust compaction tines behind the wheels fitting, e.g. Spray while, corrosion damage can be minimized.

***Arsenic (As):***Arsenic (as) is a toxic metal mostly in agricultural soils is present but in high concentration cells during exposure and human tissues harmful effect on in the soil arsenic concentrations in geography varies by regions, but arsenic in soil the mean total concentration is 5 mg/kg. Pesticide use, mining and mineral processing activities, coal-fired power plants operating and waste human including disposal in soil by activities arsenic yields. From animal skins formerly of making leather of tanneries on sites, more in soil contains arsenic in quantity.

***Cadmium (Cd):***Cadmium (cd) in its wide range due to industrial use a major environmental pollutant is soil and water cd pollution is traditional but this is a recent problem has evolved. Cd toxicity in germination for plants suppressing yields from causes damage up to physiological functions of plants, that is, water interactions, essential mineral absorption and photosynthesisaffected by cd. Enzymes or other metabolites cd exposure as a direct effect on caused or oxidized stressful reactive oxygen species it's to produce plants due to inclination metabolic changes show in recent years, cd for biology of cd contamination accumulating compounds or capable of confirmation

interest in the potential of plants has increased.

***Copper (Cu):***Copper means cu (lat from language: kapram) and atomic number is symbol 29 a chemical element containing is it is very hot and electrical conductivity a soft, containing flexible and malleable is metal. Of pure copper a newly exposed surfacepinkish-orange in color contains copper heat and as a conductor of electricity, as a building material and in jewelers sterling used silver, marine hardware and to manufacture coins used cupronic acid and strain gauges and used in thermocouples various such as constant in also used as a component of metal alloys. Temperature for measurement. Directly in nature in usable metal form (native metals) occur copper is one of the few metals. It dates back to 8000 bc, in many areas for very early human useled to thousands after years, it is sulphide first smelted from ores metal, about 5000 bc. Print the first metal cast into shape, c. 4000 bc; and bronze to create, another called tin intentional with metal the first metal to be mixed, c. 3500 bc

***Mercury (Hg):***Mercury is the smallest in the solar system so much for the planet and the sun is nearby. Around the sun its orbit is 87.97 earthit is the days of the sun most of all the planets short it's romanthe god mercurius (mercury), god of business, messenger of the gods and to gods and men mediator, greek associated with the god hermes. As with venus, so is mercury one in earth's orbitorbiting the sun as an inferior planet is coming; seen from earth when it's from the sun apparent distance is 28° does not exceed to the sun this proximity is solar west after sunset near the horizon or east before sunrise near the horizon, usually planet only during twilight can be seen. This time, it islike a bright star it may seem like material, but harder to observe than venus has from earth, planet venus through binocularsand like the moon full scale grids shows, it is approximately 116days in its synodic period recurring. Synodic to earth being close, mercury often very close to earth a planet, venus occasionally plays this role.

***TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution):*** TOPSIS is from a better point simultaneously reducing the distance and increasing the distance from a nadir point defined in terms of solutions from a set of alternatives many criteria for identification method. Significance of TOPSIS criteria comparative weights can be combined. This paper different weighing schemes and TOPSIS using different distance measurements review of many applications of makes, and previously used for a set of multiple criteria data of different weights used comparing the results. Smart and centric comparison also against waiting plans is done. TOPSIS was not found to be very accurate, but was very close in accuracy. [15]TOPSIS stands for best solution for priority by unity refers to the technique. At the beginning of TOPSIS hwang and yoon, lai et al., and yoon and by hwang. Limited subjective input from decision makers TOPSIS is attractive because it is needed. The only subjective input weights required. Thus, TOPSIS is the best alternative distance reduces, at the same time the distance to the nerve increases. TOPSIS for many applications used, however it is many others as widespread as attribute methods not used. In flexible production variation of TOPSIS for selecting clippers used. TOPSIS is an advanced product used for financial investment in organizations. In other manufacturing applications, manufacturing in the case of selecting a process, the robot will select processes it is used in application. To gain weight for TOPSIS neural network approaches used, added more ambiguous package extensions implemented. Of the company in a particular field efficiency and TOPSIS compare financial ratio performance see also are used. [16] the TOPSIS method in r value sensitivity will confirm improves weight in kind. Besides, in the formula for the value of progress has been made, ie 'excessive' method. Assessment problems due to the complexity, evaluation and necessary to understand the relationship for better and simpler method for the intrinsic value between alternatively there is r. This in the report, a novel, modified TOPSIS method, d+substitutes in the d−-plane and the distance between reference points r to calculate and evaluate

alternative quality described as a value-building process. [17]TOPSIS has been in decision-making ever since has been an important branch. Its to clarify the features, of TOPSIS and ahp characteristics are compared in table 1. The main weaknesses of TOPSIS include lifting weights, without providing a balanced test for judgments can be seen to exist. However, of ahp employment is driven by human capacity for information processing is considerably restricted, thus seven plus or subtraction two is the ceiling in comparison will be. [18] the concept of TOPSIS is the most preferred alternative is far from the positive ideal solution distance is only short distance a must, but far from negative ideal solution distance should also be long distance. Positive and idealized negative as ideal solutions and anti ideal solutions respectively this point is also pointed out by geleni. [19]TOPSIS cannot directly handle this type of data, for ranking algorithm named a-TOPSIS we adopt a TOPSIS-based approach we create. In this case, alternative means we create. In this case, alternative means and there are benchmarks. [20]in section 4, our methodology with an example of the proposed algorithm we explain. The final part ends. Multi- to solve non-objective linear programming problems expand the TOPSIS approach. Jahanshaloo et al. [21] TOPSIS procedure introduced by hwang & yoon (1981). Adoptado en este estudio. Hwang y yoon (1981) recommended vector normalization was used, this is particularly relevant for TOPSIS (chen, 2019c). With attribute weights determined by em TOPSIS is e-TOPSIS se llama TOPSIS y no ponderado TOPSIS no ponderado stands for TOPSIS (abbreviated as u-TOPSIS). Is called ew's e-TOPSIS in TOPSIS is u-the results can be analyzed by comparison with TOPSIS. [22]this review is actually TOPSIS' ranking index se planteó la cuestión de la equidad. Para eso to answer this, the first objective of this study is a a detailed analysis was conducted. [23]yang and chou also developed the TOPSIS method optimization using multiple response simulations solved the problem with discrete factors. However, of generated design alternatives TOPSIS method is not likely to be applied in assessment. [24]complexity used in classical TOPSIS to avoid the normalization formula, different scale to make the criteria comparable a linear scale transformation is used here. A methodology for extending TOPSIS to fuzzy context the approach is proposed in this section. A multitude of persons in an ambiguous environment criterion is a tool for solving decision-making problems TOPSIS to develop methodology. Data and team for decision making ambiguity in the decision-making process considering, linguistic variables of all criteria weights and depending on each criterion estimates of each alternative are used for assessment.

## 3. RESULT AND DISCUSSION

**TABLE 1.** TOPSIS ofagricultural soils

| | **arsenic (As)** | **cadmium (Cd)** | **copper (Cu)** | **mercury (Hg)** |
|---|---|---|---|---|
| clay | 81.08 | 79.53 | 23.15 | 22.05 |
| sandy | 96.12 | 94.97 | 33.69 | 27.30 |
| silty | 64.08 | 92.58 | 35.18 | 23.10 |
| peaty | 93.17 | 98.28 | 24.60 | 26.59 |
| chalky and loamy | 83.33 | 86.41 | 27.96 | 28.89 |

Table 1 shows the Alternative: clay, sandy, silty, peaty, chalky and loamyEvaluation preference: arsenic (As), cadmium (Cd), copper (Cu), mercury (Hg).

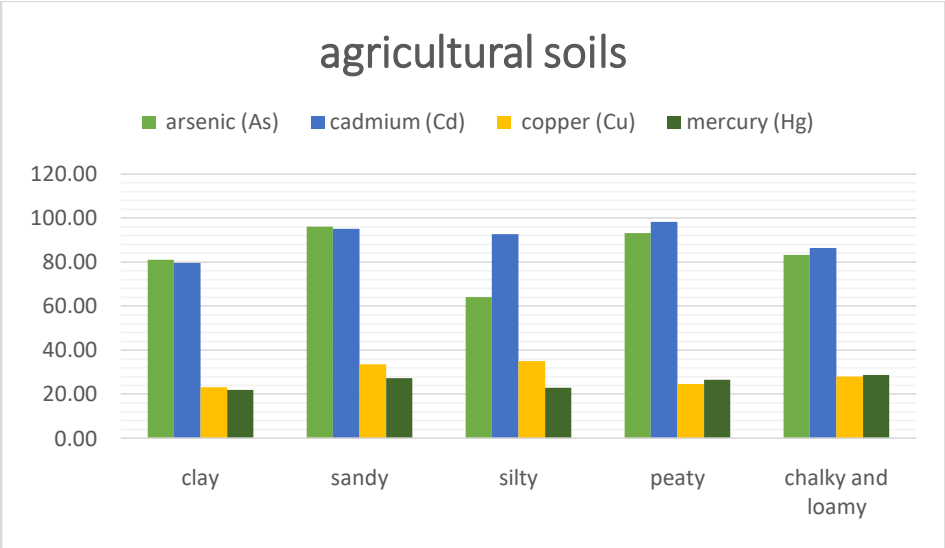


**FIGURE 1.** TOPSIS ofagricultural soils

Figure 1 Shows the arsenic (As)it is seen that sandy is showing the highest value for silty is showing the lowest value.the cadmium (Cd)it is seen that peaty is showing the highest value for clay is showing the lowest value. the copper (Cu) it is seen that silty is showing the highest value for clay is showing the lowest value. the mercury (Hg) it is seen that chalky and loamy is showing the highest value for clay is showing the lowest value.

**TABLE 2.** Squire Rote of matrix

| | | | |
|---|---|---|---|
| 6573.9664 | 6325.0209 | 535.9225 | 486.2025 |
| 9239.0544 | 9019.3009 | 1135.0161 | 745.2900 |
| 4106.2464 | 8571.0564 | 1237.6324 | 533.6100 |
| 8680.6489 | 9658.9584 | 605.1600 | 707.0281 |
| 6943.8889 | 7466.6881 | 781.7616 | 834.6321 |

Table 2 shows the Squire Rote of matrix value.

**TABLE 3.**Normalized Data

| **Normalized Data** | | | |
|---|---|---|---|
| **arsenic (As)** | **cadmium (Cd)** | **copper (Cu)** | **mercury (Hg)** |
| 0.4301 | 0.4218 | 0.3532 | 0.3834 |
| 0.5098 | 0.5037 | 0.5140 | 0.4747 |
| 0.3399 | 0.4911 | 0.5368 | 0.4017 |
| 0.4942 | 0.5213 | 0.3753 | 0.4624 |
| 0.4420 | 0.4583 | 0.4266 | 0.5024 |

Table 3 Normalized Data shows the informational set for the Alternative: clay, sandy, silty, peaty, chalky and loamyEvaluation preference: arsenic (As), cadmium (Cd), copper (Cu), mercury (Hg).The Normalized data is calculated from the data set value is divided by the sum of the square root of the column value.

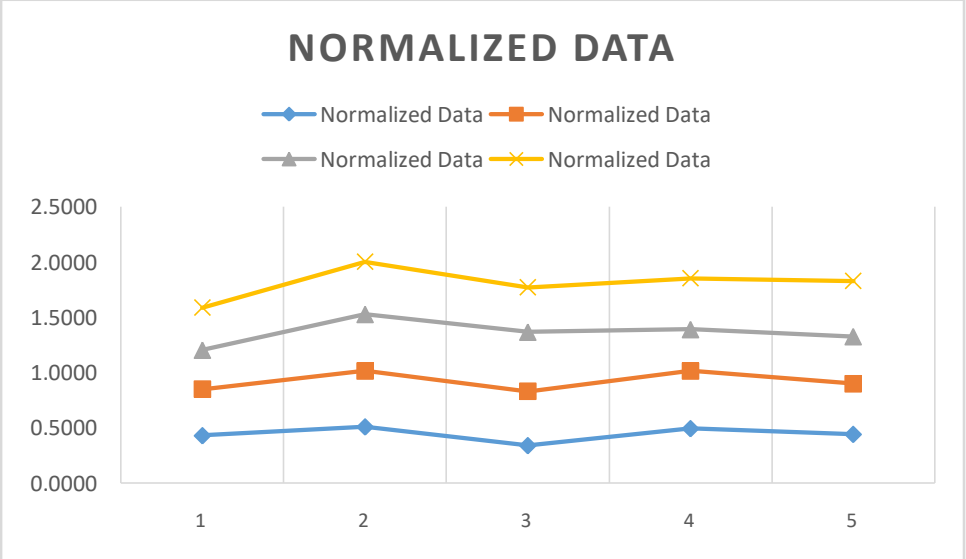


**FIGURE 2.**Normalized Data

**TABLE 4.** Weight

| **Weight** | | | |
|---|---|---|---|
| 0.25 | 0.25 | 0.25 | 0.25 |
| 0.25 | 0.25 | 0.25 | 0.25 |
| 0.25 | 0.25 | 0.25 | 0.25 |
| 0.25 | 0.25 | 0.25 | 0.25 |
| 0.25 | 0.25 | 0.25 | 0.25 |

Table 4Weight shows the informational set for the weight all same value 0.25.

**TABLE 5.**Weighted normalized decision matrix

| Weighted normalized decision matrix | | | |
|---|---|---|---|
| 0.107516 | 0.10546 | 0.088305 | 0.095862 |
| 0.127459 | 0.125934 | 0.128509 | 0.118686 |
| 0.084973 | 0.122765 | 0.134193 | 0.100427 |
| 0.123548 | 0.130324 | 0.093836 | 0.1156 |
| 0.110499 | 0.114583 | 0.106652 | 0.125599 |

Table 5 Weighted normalized decision matrix shows the informational set for the Normalized Data multiplication Weight we used the formula.

**TABLE 6.** Positive Matrix

| Positive Matrix | | | |
|---|---|---|---|
| 0.127459 | 0.130324 | 0.088305 | 0.095862 |
| 0.127459 | 0.130324 | 0.088305 | 0.095862 |
| 0.127459 | 0.130324 | 0.088305 | 0.095862 |
| 0.127459 | 0.130324 | 0.088305 | 0.095862 |
| 0.127459 | 0.130324 | 0.088305 | 0.095862 |

Table 6 Positive Matrix shows the informational set for the valuearsenic (As)0.127459, cadmium (Cd)0.130324, copper (Cu)0.088305,mercury (Hg)0.095862.

**TABLE 7.** Negetive matrix

| Negetive matrix | | | |
|---|---|---|---|
| 0.084973 | 0.10546 | 0.134193 | 0.125599 |
| 0.084973 | 0.10546 | 0.134193 | 0.125599 |
| 0.084973 | 0.10546 | 0.134193 | 0.125599 |
| 0.084973 | 0.10546 | 0.134193 | 0.125599 |
| 0.084973 | 0.10546 | 0.134193 | 0.125599 |

Table 7 Negative matrix shows the informational set for the value Enhance the arsenic (As)0.084973, cadmium (Cd)0.10546, copper (Cu)0.134193, mercury (Hg)0.125599.

**TABLE 8.** Si Positive & Si Negative & Ci

| | SI Plus | Si Negative | Ci | Rank |
|---|---|---|---|---|
| clay | 0.031874 | 0.059145 | 0.649812 | 2 |
| sandy | 0.046439 | 0.048004 | 0.508283 | 3 |
| silty | 0.063157 | 0.030546 | 0.325992 | 5 |
| peaty | 0.020868 | 0.061926 | 0.747955 | 1 |
| chalky and loamy | 0.041908 | 0.038643 | 0.479733 | 4 |

Table 8 Si Positive & Si Negative & Ci shows the informational set for the value this table.Final rank shows that clay are in Second place, sandyin Third place, siltyin the Fifth place, peaty in First place, chalky and loamy in Fourth place. The final decision is made using the TOPSIS method.

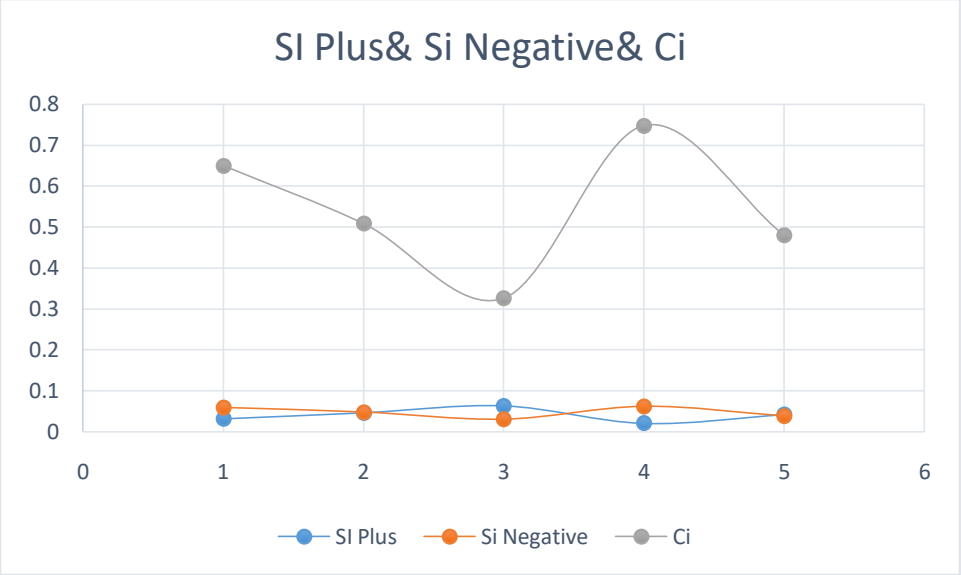


**FIGURE 3.** Si Positive & Si Negative & Ci

Figure 3 Si Positive & Si Negative & Ci shows the graphical representation.

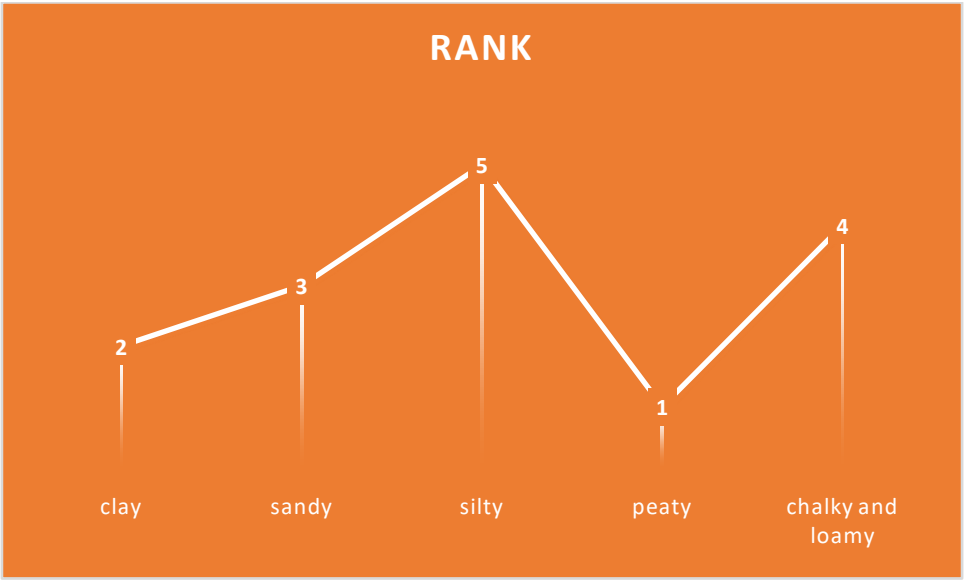


**FIGURE 4.** Rank

Figure 4 shows that Final rank shows that clayis in Second place, sandy in Third place, silty in the Fifth place, peaty in First place, chalky and loamy in Fourth place.

## 4. CONCLUSION

Soil organic matter (som) is a complex mixture, it has many soil properties and impact on nutrient cycling causes, and land application, soil type, climate and by plants impact in type and quantity causes som in soil if the concentration is allowed to decrease further, agricultural productivity significantly affected there is concern. Of soil decline in physical properties and soil nutrient cycling deficiency of means. It is soiling stable clear implications for use contains of agriculture in England from a sustainability standpoint from our discussion because we have focused, we know this very well, but similar concerns equally valid anywhere else in the world.

different 'core' of som in soils at different concentrations soil different behaviors scientists hope however, an important limitation is 2%. Soil organic carbon (soc) (ca. 3.4% som)it is widely believed that, for that there will be a steep decline below. This review soc or important limitations of som are, mainly in temperate regions

known in soilsums it up. Such sources for limits and soil quality, soil physicscharacteristics and crop nutrition and between these on interactions their possible consequences sources about and instead of specifications, quantities are critical explores the broad spectrum soc comprising soil in the desirable range of here's some evidence that maybe however, for such limitations quantitative evidence is that small we decide, but again the size of this substantial growth in resources required england and wales a decrease in soc concentration in soil other soil properties or significant in crop yield to cause consequences there is no small amount of evidence. However, the nature of soc, especially 'active' or 'new' the so-called and under various land uses a wide range of soil types its influence on properties more research on data suggests that demand. Soil quality, its definition and soil quality and with soil functions relevant relevant identifying indicators for the current discussion of it is very appropriate. Agricultural soil scientists to make the soil more productive they are exploring ways. They classify soil, essential for plant growth whether the nutrients are present test them to determine. Among such nutritional products nitrogen, phosphorus and compounds of potassium including in a particular soil if any of these items are deficient, fertilizers can provide them. Agricultural soil scientists of nutrients through the soil movement and by the roots of the plant of absorbed nutrients and size are examined. And agricultural soil scientists with the growth of roots and soil their relationship is explored. Some agricultural soil scientists of soil in relation to soil fertility structure and function trying to understand. They are the structure of soil as fine solids understand. Of soil solid frames are from rocks derived minerals and miscellaneous in dead bodies of organism's organic matter formed from contains soil soil hole location for production necessary small holes rain in the soil during absence for plants and other organisms water supplies act as water reservoirs. Water in the small pores of the soil not pure water; they soil it it is called solution. Of soil minerals in soil, in solution and from organic matter a variety of derived plant nutrients there are it is measured by cation exchange capacity. During heavy rains excess water through the soil large holes to allow passage acts as a water drain pipe. They are in plant roots and soil oxygen to other living organisms air to supply also act as a tank.

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