International Journal of Engineering Sciences & Research Technology

(A Peer Reviewed Online Journal)
Impact Factor: 5.164

✚ IJESRT

Chief Editor

Executive Editor

Dr. J.B. Helonde

Mr. Somil Mayur Shah

IJESRT

INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY

GENERAL OVER-VIEW OF RANGE REHABILITATION IN TURKEY

Nilufer Yazici

Faculty of Forestry, Applied Sciences University of Isparta, Isparta, TR-32260, Turkey

ABSTRACT

46.7% (10.1 million ha) of Turkish forest area is unproductive. The unproductive forest area can be seemed a potential for different utilizations except of wood production such as range purpose. Range, one of the most important natural resources, is a combination of both forestry and agricultural practices.

Turkey has 14.6 million ha range area (18.6% of Turkey). Range potential of unproductive forest is cover an important amount in the range area. Rehabilitation is one of the important ways in optimal utilization of present range area, to decrease erosion, and also to transmit present biodiversity to next generation.

The range rehabilitation was 64564 ha from 1946 to 1991, and 32413 ha between 1992 and 2003, while it was 64777 ha from 2004 to 2009, and 182863 ha between 2010 and 2015. There were large differences among years for range rehabilitation area in Turkish forestry.

In the present study, range rehabilitation in forest area is examined to discussion for future rehabilitation based on forest inventory over years between 1946 and 2015.

KEYWORDS: Forest, Livestock, Range land, Rehabilitation, Vegetation.

1. INTRODUCTION

Rangelands are a type of land on which the natural vegetation is dominated by grasses, forbs and shrubs and the land is managed as a natural ecosystem. Rangeland is one of the most important natural resources which is a combination of both forestry and agricultural practices such as agroforestry. It has also many important roles in wildlife management, livestock, sustainable biodiversity and also utilization of unproductive forest and agricultural areas. Rangelands are distinguished from pasture lands because they grow primarily native vegetation, rather than plants established by humans. Rangelands are also managed principally with practices such as managed livestock grazing and prescribed fire rather than more intensive agricultural practices of seeding, irrigation, and the use of fertilizers.

Range management's focus has been expanded to include the host of ecosystem services that rangelands provide to humans world-wide. Key management components seek to optimize such goods and services through the protection and enhancement of soils, riparian zones, watersheds, and vegetation complexes, sustainably improving outputs of consumable range products such as red meat, wildlife, water, wood, fiber, leather, energy resource extraction, and outdoor recreation, as well as maintaining a focus on the manipulation of grazing activities of large herbivores to maintain or improve animal and plant production [1]

Rangelands serve multiple purposes as:

• A habitat for a wide array of game and non-game animal species;
• A habitat for a diverse and wide array of native plant species;
• A source of high quality water, clean air and open spaces;
• a setting for recreational hiking, camping, fishing, hunting and nature experiences;
• The foundation for low-input, fully renewable food and fiber production systems of grazing industries.

Because of the diversity of goods and services derived from rangelands, their management and health are linked closely to the economic well-being of many communities [2] It is getting importance for Turkey which has 10.1 million ha (46.7% of total forest area) unproductive forest area (Figure 1)[3].

Figure 1. Forest area of Turkey

Forest establishment including afforestation, reforestation, artificial regeneration, rehabilitation and private plantation is the most important way in conversion of unproductive forest to productive[4]. However, some unproductive forest area cannot be suitable for forest establishment because of climatic and edaphic factors. The unproductive forest area can be seemed a potential for different utilizations except of wood production such as range purpose. The range rehabilitation is examined to discussion for future rehabilitation based on forest inventory over years between 1946 and 2015 in the present study.

2.   MATERIALS AND METHODS
Range rehabilitation data was obtained from inventory of General Directorate of Forestry of Republic of Turkey Ministry of Agriculture and Forestry for the years. Beside, observation of the author was given.

3.   RESULTS AND DISCUSSION
Pasture areas around in the world were 3.4 billion ha. It had 181 million ha in the EU and 14.6 million ha in Turkey. Turkey was also ranked as 46 for the amount in the world rankings. Eastern Anatolia Region of Turkey had the largest share in meadow and pasture areas. It had more than half of the total meadow and pasture areas with a share of 57% in terms of pasture areas as seen in Table 1. When the total pasture-pasture area was examined in Table 1, the amount of total meadow area was ordered as Eastern Anatolia Region (37.54%), Central Anatolia (29.68%) and Black Sea Region (11.97%) [5]. As known, Turkey pastures 46.5 million hectares in the 1940s, 37.9 million hectares in the 1950s declined, while 14.6 million ha in 2009, decreased by 3 times because of from climate, soil and land factors.

*Table 1. Inventory of meadows and pastures (ha) areas in Turkey*

Region	Meadow	Meadow ratio	Pasture	Pasture ratio	Total Meadow - Pasture Area	Meadow Range
Marmara Region	51.131	3.53	518.501	3.94	569.633	3.90
Aegean Region	52.827	3.64	750.055	5.70	802.881	5.49
Central Anatolia	176.962	12.21	4.160.531	31.61	4.337.493	29.68
Mediterranean Region	44.888	3.10	614.446	4.67	659.334	4.51
Black Sea Region	252.402	17.41	1.496.921	11.37	1.749.322	11.97
Eastern Anatolia Region	823.160	56.80	4.662.290	35.42	5.485.449	37.54
South-eastern Anatolia Region	47.974	3.31	959.834	7.29	1.007.808	6.90
Total	1.449.343		13.162.577		14.611.920	

Afforestation, erosion control, rehabilitation of degraded forest areas and pasture rehabilitation have been accelerated since 1946. General range rehabilitation area in Turkish forestry was given for years in Table 2 [6].

Table 2. Range rehabilitation activities between 1946-2015

Periods	1946-1991	1992-2004	2005-2009	2010-2012	2013-2015
Rehabilitation area (ha)	64564	32413	4780	27717	155146

There were large differences among years for range rehabilitation area in Turkish forestry (Table 2, Figure 2). It was aimed to perform erosion control, afforestation and forest pasture improvement practices on 1.620.000 ha by 2023.
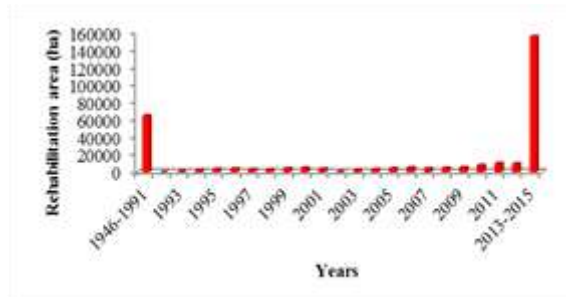
Figure 2. Range rehabilitation activities for the years

Turkey has 14.6 million ha range area (18.6% of Turkey) (Figure 3). More than 70% of our current mines were located in arid and semi-arid climate zones. This was one of the most important factors in the weak development of the vegetation cover. Range status in a significant part of our country's heritage was between moderate and weak. In addition, the misuse of our mines since early years (early grazing, overgrazing) had led to the weakening of the vegetation cover, causing active erosion to occur in 64% of range lands [6].

However rehabilited area was very low as seen from Table 2. It could be related economy and regional geographic factors [7] and also range management practices. For instance, [7] reported 85% of range area was in arid and semi-arid region of Turkey. [8] studied on botanical composition, canopy coverage, rangeland quality degree, and some soil properties such as texture, bulk density, organic matter content, pH and CaCO3 content in a rangeland to contribute range rehabilitation. [9] investigated effects of grassland improvement through fertilization and resting on grass yield and quality on natural grassland. Similar study was also carried out by [10] to determine the most efficient rehabilitation method based on different fertilizer and herbicide practices. These studies showed getting importance of range rehabilitation by different practices such as fertilization.

Figure 3. A view from common range in northern part of Turkey

Range rehabilitation had also effective on soil protection, and to be higher quality and quantity of range area. It was reported that 679 billion ha area was degraded by intensive pasturage in the whole the world during last 50 years [11]. Range Management was a distinct discipline founded on ecological principles and dealing with the use of rangelands and range resources for a variety of purposes. The purposes could be as watersheds, wildlife habitat, grazing by livestock, recreation, and aesthetics, as well as other associated practices [2]. Rangelands represented approximately 50% of the Earth's land area and provision multiple ecosystem services for large human populations. So, it could be said that rangelands cover different ecological conditions. It showed that

ranges should be managed by multi-disciplines such as ecologist, agriculturist and wildlife managers, together with combination of both forester and an agriculturist. They could be also supported by local people and associations.

Range should be seemed as an utilization method from unproductive forests. Range rehabilitation could be continued in large area because of its importance in wildlife, livestock, biodiversity and soil protection. Biotechnology should be also used such as improved grass seeds to produce higher quality and quantity range products in rangelands. Renting of rangelands to local people should be taken into consideration.

REFERENCES

[1] J. E., Herrick, J.R., Brown, B.T., Bestelmeyer, S.S., Andrews, G., Baldi, J., Davies, M., Duniway, K.M., Havstad, J.W., Karl, D.L., Karlen, D.P.C., Peters, J.N., Quinton, C., Riginos, P.L., Shaver, D., Stainaker and S., Twomlow, 2012. "Revolutionary Land Use Change in the 21st Century: Is (Rangeland) Science Relevant? Rangeland Ecol Manage 590-598: 65.

[2] www. oneplan.org/Range, 2016. Range Management

[3] Anonymous, 2017. Forest Inventory of Turkey. General Directorate of Forestry. Ankara, Turkey.V. Chakravarthy, X. Li, Z. Wu, M. Temple, and F. Garber, "Novel overlay/underlay cognitive radio waveforms using SD-SMSE framework to enhance spectrum efficiency—Part I," IEEE Trans. Commun., vol. 57, no. 12, pp. 3794–3804, Dec. 2009.

[4] Bilir, N., Gulcu, S., 2015. General Over-View of Forest Establishment in Turkish Forestry. Reforestation Challenges Conference, 3-6 June, Belgrade, pp.159-163.

[5] A., Kusvuran, R. I., Nazli and V., Tansi. 2011. Current Situation of Meadow-Rangelands, Animal Existence and Cultivation for Forage Crops in Turkey and East Black Sea Region. University of Gaziosmanpaşa, Journal of Faculty of Agriculture 28(2), 21-32.

[6] www.ogm.gov.tr, 2017. Website of General Directorate of Forestry of Turkey, Ankara, Turkey

[7] Babalik, A. A., 2015. Range managemet presentation (unpolished materials). Forestry of Suleyman Demirel University, Isparta, Turkey.

[8] Palta, S., 2008. Determination of some quantitative properties of range vegetation and ecological conditions for range rehabilitation in Bartin Uluyayla. Msc. Thesis, Zonguldak Karaelmas University, Turkey.

[9] Yavuz, T., 1999. An Investigation on improvementof natural grassland in Taşlıçiftlik village of Tokat province trough fertilization and resting. Msc. Thesis, Gaziosmanpasa University, Turkey.

[10] Yavuz, R., 2013. Fertilizer and herbicide applications for rangeland rehabilitation (Duzce Koprubasi omerefendi case study). PhD. Thesis, Duzce University, Turkey.

[11] Dogan. O., 1995. Soil source, problem and solutions in Turkey. Standard Environment, p. 73-79, Ankara.

CITE AN ARTICLE

Yazici, N. (2018). GENERAL OVER-VIEW OF RANGE REHABILITATION IN TURKEY. *INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY, 7*(11), 72-75.