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SUSTAINABILITY FACTSHEET #09

Hydroseeding for Post-Mining Site Rehabilitation

Hydroseeding or hydraulic mulch seeding, was developed in the USA in the 1950s as a means of revegetating natural systems following disturbance by industrial, mining or construction activities.

Essentially it is a grass planting process. A slurry comprising seed, mulch, fertilizer, healthy soil ameliorants and water is mixed in a Hydroseeder tank and sprayed onto the topsoil of land that needs to be rehabilitated.

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EXECUTIVE SUMMARY

Hydroseeding, also referred to as hydromulching, is a grass planting process. It is a fast, cost effective and high-quality method for seeding vegetation, land rehabilitation and erosion control. The process is fast, efficient, and economical and is usually more effective than conventional seeding and more economical than conventional sodding.

The process begins by mixing mulch, seed, tackifier, germination and growth promoting agents, fertilizer, and water in a Hydroseeder to form a slurry. Mulch is any material that is spread or laid over the surface of the soil as a covering. It is used to retain moisture in the soil, suppress weeds, keep the soil cool, and make the garden bed look more attractive. The most common types of mulch include: compost, grass clippings, shredded leaves and straw.

The slurry is applied to the topsoil surface of the area to be rehabilitated with a high-volume pressure hose or tower. Once applied, the slurry mixture enhances initial growth by providing a microenvironment beneficial to seed germination and turf development, which will also provide a uniform cover for dust and erosion control.

The method is ideal for a variety of seeding requirements, including lawn seeding, erosion control, slope stabilization, and large-scale area rehabilitation post mining activity.

BENEFITS OF HYDROSEEDING

Cost effective

Hydroseeding is definitely the most economical choice for establishing vegetation without the expense, time, material costs and/or installation demands of sodding or traditional hand seeding methods. Hydroseeding typically costs 50-80 percent less than the price of sod, and coupled with labor charges, the overall expenses associated with sodding can be astronomical (Hydromulch, 2018). Hydroseeding is also a more cost-effective solution than hand seeding and can be completed in a fraction of the time.

Vegetation Quality

The quality of the vegetation that hydroseeding affords is much healthier, greener and longer lasting than sodding or hand seeding applications. The roots are grown deeper into the soil and thus avoid the shock of being transplanted into foreign soils. Hydroseeding typically yields superior results the first time it is installed, and the seeds are more resistant to external problems because it has been adjusted to its present soil conditions (Hydromulch, 2018).



Coverage

Hydroseeding creates an evenly covered area that forms a barrier to keep seed stabilized and retain moisture, fertilizer and other healthy growth-enhancing nutrients, while ultimately resulting in full, lush vegetation. Other beneficial coverage advantages of hydroseeding are its ability to cover large, difficult and inaccessible areas, such as slopes, that are too steep for sod applications.

Erosion Control

Erosion control is the most prevalent reason for using hydroseeding in an effort to hold moisture and protect against erosion from wind, rain and pests, through the binding action of seed, mulch, tackifiers and other soil conditioners with the top soil layer.

Versatility and use

Hydroseeding is used primarily to establish permanent vegetation or landscaping, however it is also known for serving as temporary cover for soil stockpiles. One of the benefits of hydroseeding is that indigenous seed varieties can be added to the hydroseeding slurry mix.

Speed

Although hydroseeding doesn't result in "instant lawn" gratification, such as sod, the combination of cost, quality, coverage, erosion control and health definitely tip the scales in favor of the plentiful benefits of hydroseeding. Hydroseeding is faster and easier to install than sod, and this rapid application is managed without extensive labour requirements.

In comparison to other methods of seeding, seed applied in a hydroseeding mix will generally show growth and develop turf faster than if it was applied in a broadcast fashion.

Water Retention

No other method of growing grass, whether sod or hand seeding, has the advantages of hydroseeding when it comes to water retention. In the hydroseeding mix, fibre mulch and tackifiers are used to anchor the mixture to slopes and help seal in moisture. The water is then slowly released, along with nutrients, to the root system to constantly replenish itself until the next rainfall.

Hydroseeded ground starts growing grass from the root first, allowing the root system to go deep into the ground where moisture is at its greatest, making very drought-tolerant vegetation (Hydromulch, 2018).



Figure 1: Mine Site Revegetation using Hydroseeding. Source: Maccaferri, 2017

CONCLUSION

Hydroseeding presents a cost-effective, sustainable and efficient solution to traditional, labor-intensive and time-consuming grassing methods used for site post-mining site rehabilitation. The method is well suited for rehabilitation of clay mining sites and provides effective erosion control and good quality and a uniform vegetative cover which will not require ongoing maintenance. Overall, hydroseeding presents an effective, sustainable solution for rehabilitation of clay quarries.

REFERENCES

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For further information:

The Clay Brick Association of South Africa

Website: www.claybrick.org