

PRATI ARMATI®: Legal Information

While PRATI ARMATI® technology is being applied all over the world with increasing success even in areas affected by hurricanes and in desert lands, some people, instead of engaging in research and development, are pirating the successes of Prati Armati srl by claiming to be authors of the relevant installations.

Recently we have actually monitored several events of fraud, plagiarism, misappropriation and theft of photos, texts, documents, scientific publications, etc. by third parties, relating to PRATI ARMATI® technology.

In some cases, it happened that dishonest individuals have even published on their websites and manuals pictures of our installations, our literature, our scientific articles, brazenly claiming relevant authorship.

Reports and complaints have already been forwarded to the competent Authorities: Public Prosecutors, ANAC (National Anti-Corruption Authority), the Court of Auditors, the AGCM (Guarantor Authority for Competition and Market).

Please note that PRATI ARMATI® is an innovative anti-erosion technology performance-based, with strict and important technical specifications, proved by official certificates and evidence of results in hundreds of installations, even on barren soils polluted with heavy metals and hydrocarbons, in extreme climatic conditions.

In order to avoid unpleasant mistakes, we deem appropriate to emphasize the key characteristics that identify PRATI ARMATI® compared to other anti-erosion technologies:

Anti-erosion intervention and ecological restoration using deep-rooting grass species. Sowing performed by mechanical means using the methods of broadcast sowing or hydroseeding in places that can be accessed easily, or by using helicopter in inaccessible areas and for areas exceeding 20,000 m². This technology counters erosion and desertification but it is not able to stabilise slopes that are subject to landslides, which therefore need to be previously stabilised from a geotechnical viewpoint (Safety Factor SF>1).

It should be pointed out that erosion is the progressive removal of the surface of the ground via the detachment and transportation of individual particles by such physical agents as water, wind, ice, etc. Landslides, on the other hand, consist in the gravity-induced downward movement of portions of land having various forms and dimensions and with differing kinematic mechanisms.

The intervention falls within the category OG13: this remains a tender to carry out works (or works tender) and not one for supply and installation. It therefore comes within the legal framework for tenders for works (or works tenders).

The intervention shall be carried out on surfaces whose angle of inclination does not exceed 60°, that have been prepared for the purpose and are unencumbered by weeds, bushes or trees. It shall be carried out using:

- a seed mix of at least 12 species or varieties of perennial grasses whose quantity and proportions are to be specified on the basis of the pedological characteristics of the site, and having the following characteristics:** *sturdiness, non-infesting and not genetically modified, adaptable to extreme soil and climatic conditions within a temperature range of -45°C to +60°C, resistant within a pH range between pH 4 and pH 11, fire-resistant with an ability to re-sprout even following fires. A root system presenting the following characteristics (verified on samples cultivated in nurseries at sea level and in containers at least 200 cm in height and 20 cm in diameter, in loose soil and using drip irrigation): a high root-system growth rate, which shall reach 200 cm over the course of 24 months of vegetative development; roots having a homogenous diameter along their whole length (from root collar to root tip) of between 0.1 mm and approx. 3 mm, having a high root density (of more than approx. 10 roots per square centimetre), measured at approx. 50 cm beneath the root collar 24 months after sowing; having a roots mean tensile breaking strength of not less than 15 MPa and with at least one value of above 200 MPa as certified by a qualified University, public Institute or Laboratory; the arithmetical mean of the mean breaking strength at root rupture (calculated as the arithmetical mean of the mean values for the species making up the seed mix) shall exceed 80 MPa.*

PRATI ARMATI®

contro la desertificazione e l'erosione dei suoli

- fertilizer (mineral or organic-mineral, or organic) and possibly tackifying agents, mulches and soil activators in quantities and proportions to be specified on the basis of the pedological characteristics of the site.

The price includes maintenance over the 36-month period following the first sowing. This shall take the form of re-sowing and dressing, to be carried out during agronomically suitable times, in cases where germination has proven to be less than 80% following a complete vegetative cycle. The time lines for germination and root-taking, the number and types of species or varieties that will develop among the 12 sown, will strongly depend on the soil and climatic conditions of the site, i.e.: soil type (particle size, structure, surface roughness, soil cohesion, density, hardness, compactness, saturation, permeability, aeration), aspect and exposure, gradient, latitude, altitude, rainfall, humidity and temperature.

The time taken for germination and root-taking also depend on surface working of the soil, the sowing season, rescue irrigation, etc.

It usually takes from 12 to 24 months to obtain a plant coverage equalling at least 80% of the cultivable area (excluding rocky outcrops, walls, asphalted surfaces, etc.) and to counter erosion, unless there are special conditions and drought-affected zones.

The price also covers all necessary measures for carrying out the anti-erosion and ecological recovery work in a workmanlike manner, but excludes all those operations needed to guarantee the complete stability of the slope, the catchment and channelling of atmospheric and ground water and any preparatory works of soil cultivation.

PRATI ARMATI®
PRATI ARMATI® is a natural technology that:

- uses seeds of herbaceous perennial deep rooting plants capable to grow on practically any lithotype and climate;
- contains EROSION even on most barren ground types;
- reduces water infiltration into the ground thanks to the thick leaves blanket and favors water removal from upper soil layers thanks to evapotranspiration, with positive effects on some geomorphological parameters of soil: saturation, pore pressure, cohesion, shear strength, etc.;
- fully replaces a whole package of works: erodible materials, used in traditional interventions to contrast erosion (geocells, geonets, biomats, mulch, plastic materials, topsoil, etc.), resulting in important technical, economic and environmental advantages;
- in relatively steep slopes, favoring biodiversity and accelerating ecological succession;
- substitutes up to 400% more CO₂ than traditional plants;
- requires no maintenance (mowing, watering, fertilizing, etc.).

BEFORE
AFTER
Cristoforo (Ferrara)
Typical PRATI ARMATI® root

CHARACTERISTICS OF PRATI ARMATI®

- BOTANICAL AND ECOLOGICAL CHARACTERISTICS**
 - perennial herbaceous species;
 - sturdy;
 - evergreen;
 - forage plants;
 - Non-GM;
 - Non-invasive (non-seeds);
 - many autochthonous.
- ENVIRONMENTAL FEATURES**
 - capability to capture CO₂ up to 400% more than common grassy plants;
 - adaptability to all kind of soils and to extreme pedoclimatic conditions (up to 55° temperature from -20°C to +45°C);
 - high resistance to drought, salinity, flooding;
 - high sprouting vigor after fire.
- ECOLOGICAL FEATURES**
 - increasing soil shear resistance and safety factor
 - hulks waterproofing
 - protection from fractures and rilling
 - reduction of soil saturation
 - plasticity of PRATI ARMATI® soil system
- SOIL SUBSTITUTIONAL EFFECTS**
 - high growing speed
 - high depth and density of fibrous
 - thin and homogeneous roots
 - marks with high average tensile strength (up to 200 MPa).

It is the combination of these special characteristics that makes the Technology of PRATI ARMATI® unique.

PRATI ARMATI® roots (left) compared with roots from traditional hydroseeding (right).

PRATI ARMATI® roots (1.5 cm Ø) roots
Roots of traditional plants (1.5 cm Ø) roots

ADVANTAGES VS COMMON GRASSY SPECIES

At the same time of life, PRATI ARMATI® plants show a much deeper root system with respect to common grassy plants, both during development and at steady state.

Root development one month after germination
Comparison of root development between traditional grassy plants and PRATI ARMATI®

ROOT TENSILE TESTS

THIN, HOMOGENEOUS, DEEP ROOTS WITH GOOD MECHANICAL PROPERTIES → INCREASE SOIL SHEAR RESISTANCE → INCREASE SAFETY FACTOR OF SLOPES

Mechanical strength of roots has been evaluated using tailored tensile test equipment by 'The Institute of Agricultural Hydrology' of 'Università degli Studi di Milano'

EQUIPMENT USED FOR TENSILE TESTS ON ROOTS

Stress diameter chart on some PRATI ARMATI® species

ROOT TENSILE TESTS

Test results confirmed the high tensile resistance of roots, with average breaking values up to 206 MPa (21 kg/mm²).

Average Stress Values of PRATI ARMATI®: 83.16 MPa

Average Stress Values of traditional plants: 31.81 MPa