INNOVATIVE IRRIGATION With APPROTECH POROUS PIPE (APP)

APPROTECH Porous Pipe (APP) is made from recycled rubber and polyethylene. It is an extruded membrane that allows water and/or air to pass through pores of the wall at law pressure. Since these tiny openings are pores (not mechanically made holes) there is no intrusion of roots or soil particles into the pipe.

It is a continuous emitter that can create a moisture band at the root zoon. The moisture band that it creates can conform to the root zone dimensions of the row crops, bushes, trees, and narrow strips of turf. By matching the spacing of **APPROTECH** Pipe with the capillary ability of the soil, the moisture bands can overlap to create a total coverage of area such as lawns, athletic fields, forage and hay crops. This concept is a step beyond the inconsistent method of watering rectangular areas with circular patterns created by sprinklers, misters, bubblers and drip emitters.

APPROTECH Porous Pipe (APP) is designed to be the most efficient method of irrigation available today. It uses the principles of low flow/low pressure to introduce moisture to the soil at a rate that allows the soil to absorb the water at its natural rate.

In dramatic contrast with surface watering, there is minimal loss of moisture to evaporation and run-off, and there is no wind drift. It is easy to save up to 30 to 70 percent of surface applied water using our **APPROTECH Porous Pipe (APP)** Sub-Surface Irrigation (SSI) system. Water can be directly applied to the roots of plants, encouraging deeper and more extensive root development and resulting in healthier, more productive plants. Diseases and insects that incubate in surface-applied moisture are often completely eliminated.

There are additional benefits from watering with a Sub-Surface Irrigation (SSI) system using **APPROTECH Porous Pipe (APP)**. A more accurate and continuous moisture level can be made available to plants. This eliminates the shock effect of the wet/dry cycles that are common with conventional irrigation. The root zone can be kept at the desired moisture level without cutting off the oxygen supply. Without such stress, the plant can devote all its effort to producing foliage, flowers, and fruit.

Sub-Surface Irrigation (SSI) does not contribute to compaction like surface watering so the soil needs less tillage. Adding moisture below the surface inhabits the development of hardpan and sealing of the soil strata. This limitation of compaction is also a major benefit in turf areas used for sports and recreation as well as forage areas for livestock. Natural activities in the soil such as earthworms and microbial life are encouraged and prompted by this moist (but not wet) environment. Selected nutrients and soil additives can be applied through the **APPROTECH Porous Pipe (APP)** system to provide an optimum and continuous level of benefits.

Maintenance for **APPROTECH Porous Pipe (APP)** is minimal, with no sprinkler heads to replace, no surface pipe to damage by machines or animals and no emitters to unclog. All normal activities can take place on the surface while the roots are being watered. Water is not sprayed or dripped on surface where evaporation occurs, leaving stains and residues.

APPROTECH Porous Pipe (APP) can be used in variety of ways to meet virtually any irrigation needs. It is not affected by freezing temperature and its flexibility prevents it from being damaged by expansion and contraction of the soil.

16, Samruddhi Society, Bh. Avishkar Complex, Akota Vadodara 390 020, Gujarat, INDIA
Cell – 93227 04060 E-mail: mehulntt@gmail.com

In many areas of the world, water is already in limited supply and this precious element is becoming increasingly less available in places that traditionally have had an abundance of water. As the supply of water decreases and the demand increases, it is automatic that the cost of this vital substance becomes greater.

It is imperative for all water users to make efforts to curtail water waste. Normal practices that waste water contribute to water pollution, as well as in some areas these problems (water waste and water pollution) have escalated into monumental proportions.

Agricultural irrigation is one of the most essential uses of water. Without irrigation, the production of many fertile areas would drop or even become non-existent. Irrigation traces back for centuries and some of the same methods used 100s of years ago are still being used today. Flood irrigation is notorious for wasting water and contribution to pollution. Sprinkler systems and drip systems are a step in the right direction but, despite the advancement of these methods, they still apply water to the soil surface.

All irrigation systems endeavor to deliver water to the root zone of the desired plant life but the application of water to the surface does not always accomplish the intended purpose. Much of this water is lost to evaporation; run-off and/or percolation passed the root zone.

All surface moisture (from flood irrigation, sprinkler, drippers, etc.) is subject to evaporation loss. The rate of this loss is determined by many factors but the most influential factors are high temperature, low humidity and wind. Unfortunately, these three factors are most dominant in arid areas that have the greatest need for irrigation.

One immediate solution to the problem of water waste and water pollution is to use **APPROTECH Porous Pipe (APP)** to apply water directly where it is needed the root zone. **APPROTECH Porous Pipe (APP)** is designed to be installed below the soil surface and supply moisture at a rate that the soil can absorb it. Less tillage is required and this tillage is done above and/or along side the **APPROTECH Porous Pipe (APP)**.

With proper system operation, the soil moisture can be maintained at an optimal level that allows the air movement into the soil. This balance of air and water in the soil promotes maximum soil health and plant productivity. This more exact application of water also eliminates run-off, another factor of water waste and serious contributor to pollution.

APPROTECH Porous Pipe (APP) irrigation system can be regulated to supply the daily moisture needs of the plant. Frequent applications of proper amounts of water allow the plants to utilize a high percentage of the water that is applied to the soil. This eliminates another source of water waste and pollution (percolation past the root zone).

Another saving in APPROTECH Porous Pipe (APP) irrigation is in cost. Most irrigation systems require high volume and high pressure to operate properly. APPROTECH Porous Pipe (APP) is designed to operate with low volume and low pressure. This allows for smaller and less expensive pumping systems, smaller energy demands. It also allows the use of water supplies such as wells, streams and ponds that are inadequate for conventional irrigation.

An additional saving with **APPROTECH Porous Pipe (APP)** is in maintenance. Conventional irrigation systems require a high level of maintenance and repair because of the many moving

parts as well as exposure to elements, vandals, animals, equipments and activities. **APPROTECH Porous Pipe (APP)** has no moving parts it is buried which protect it from most damaging factors.

Because of its material composition, **APPROTECH Porous Pipe (APP)** has the longest life span than any other irrigation system on the market. After examining our raw materials and manufacturing process, a major university felt very comfortable in predicting a minimum functional life span of 50 years, if the pipe is buried, there is virtually nothing to deteriorate or degrade. Other elements of the system such as valves, pumps etc. would need periodic repair or replacement but our **APPROTECH Porous Pipe (APP)** should remain serviceable long after other systems have ceased to function.

APPROTECH Porous Pipe (APP) system can be controlled with a simple valve that is manually operated or automated by a conventional irrigation controller or it can be connected to the most sophisticated devices. Equipment designed for sprinkler or drip systems can usually be used with porous pipe. All fitting, clamps, valves, controllers, pressure regulators, flow restrictors and other such devices are off-the-shelf items. **APPROTECH** can supply these supplies along with **APPROTECH Porous Pipe (APP)**, if needed.

It is easy for a grower or even a laborer with limited education and experience to understand the basics of watering with **APPROTECH Porous Pipe (APP)**. Regular inspection of soil and of soil moisture can indicate the need for more or less water. Growers who monitor evapo-transporation rates can program their irrigation system to maintain a proper level of moisture in the root zone.

APPROTECH Porous Pipe (APP) is a product that meets the irrigation needs of almost any grower, regardless of how large or small the application. It is easy to modify or expand the system to adjust to the changes that a grower experiences from season to season and year to year.

The fact that our pipe is made from recycled rubber causes it to fit well the ecological attitude that is expanding in the world today. Many governments are encouraging their public and private sectors to use recycle products wherever possible. **APPROTECH** is proud to offer a product that contributes to saving our most important natural resource, water. We are also proud that our unique manufacturing process can utilize recycled materials otherwise be wasted.