**Individual Stem Injection**

**Where Applicable:** Individual stem injection is used to reduce the competition of unwanted trees within managed stands. This practice is often used in combination with other herbicide applications or with prescribed burning to clean up areas not suitably addressed prior to planting or natural regeneration. Applying herbicides through injections can be used to improve the health and vigor of pre-existing stands or to remove unwanted trees within pure stands such as pine plantations. Stem injections should not be applied to trees or saplings less than two inches dbh (diameter 4.5 feet above ground) or in areas with more than 200 undesirable stems per acre. This practice is usually applied where broadcast application cannot be done or where more selective control is desired.

**Description:** There are three ways to inject trees with herbicides; (1) injection at the base of the stem with a tube-injector, (2) injection higher up on the stem with a hypo-hatchet, and (3) the hack-n-squirt method (also done at breast height) in which the injection is made with a hatchet and the herbicide is sprayed into the cut with a squirt bottle. Individual stem injection is applied during the late summer and early fall (August through October) when trees are actively translocating food and water reserves to the root systems. Common herbicides used for this practice include; Chopper, Arsenal, Accord, Garlon 3A, Tordon 101R, and Tordon RTU. Herbicide applications should be thorough and consistent in order to obtain control of vegetation on the site. A proper cut is essential in the application of this practice. The cut should be made in the form of a cup that can hold the herbicide until it can be taken in by the tree. Edges of the cup should not be torn, thereby allowing the herbicide to leak onto the bark. The cup should be deep enough to allow the herbicide to penetrate through the bark into the woody part of the tree. It is a violation of Federal Law to use these products in a manner inconsistent with their labeling (see specimen labels for general information, directions for use, precautionary statements, mixing, handling, application or disposal instructions, etc.). For further information on chemical use, consult an applicator that is certified by the state of Texas.

**Benefits:** This practice is extremely beneficial to pre-existing and pure stands by eliminating unwanted, low quality, and poorly formed trees. Through the removal of these trees, the desired tree species can obtain more soil nutrients and water which will lead to better growth and health of the stand. Creating dead snags provides wildlife habitat (nest cavities, forage areas, predator perches, etc.) for certain animal species and may increase forage production by increasing sunlight to the forest floor.

**Other Recommendations:** Inconsistent results may occur when the herbicides are injected into trees under severe drought conditions. Heavy rains during or shortly after injection may wash the herbicide out of the cup and reduce the herbicide's effectiveness. All Texas Forestry Best Management Practices for silvicultural chemicals should be followed.

**Cost:** The cost of this practice will vary ($60-70/acre) depending on the type of chemical used, vendor availability, chemical costs, the number of stems per acre to be treated, etc.

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