

## Shrub responses to experimental fire. First phases of regeneration.

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**SUMMARY** - *This study is devoted to the knowledge of the regeneration of shrub vegetation community after the impact of fire. Four zones have been controlled, and they are situated in the Leon province, in the north-west of Spain, between the border of influence of the evergreen-oak tree and a typical shrubland of heath in mountain region. In each of the study zones one sampling plot of 100m<sup>2</sup> was burned, after their structural composition had been evaluated by means of an analysis of their cover. Another plot which was totally cleared by cutting was used to evaluate the biomass of the different species. The first phases of regeneration of the most important species have been evaluated subsequently. The volume has been estimated, utilizing two models of approximation, which answer to the geometrical figure of half of one ellipsoid and the paraboloid of revolution.*

**KEYWORDS** : *Shrub, experimental fire, regeneration, vegetation cover, heaths.*

### INTRODUCTION

The Advisory Commission of Spanish Technical and Scientific Research (CAICYT) during the last few years has promoted some Special Programmes and Mobilization Plans with the aim of orientating research towards priority areas or towards those insufficiently covered. The special programme of Research and Development (I + D) in Agroenergetics was decided in 1982 in reply to the energy crisis of the Seventies and began in July 1984. One of the aims is the evaluation of the potential energy of the conventional and alternative sources of the biomass. The work we present is part of that programme, having as its primary aim the evaluation of the biomass in the forms of shrub in the Spanish region of Castilla - Leon. One part of this study is devoted to the knowledge of the regeneration of the vegetation community after the impact of several degenerative and drastic processes such as rooting up, cutting or fire. This communication will be centred on the effects of the latter.

The superficies of land covered with shrub in Spain in any of its types is about 20%, corresponding to the climax communities in the supraforestal border, extended to lower altitudes because of the elimination of the forest and the effects of abusive sheep grazing or else as parts of derived regressive formations, due to the degradation of arboreal climax.

The characteristics of shrubby formations of Mediterranean climates which are adapted to more or less periodical fires, are numerous, and in some instances they even depend on fires to maintain themselves in optimal conditions of structure and functioning. The Californian chaparral (BISWELL 1974, PARSONS 1976, KEELEY & KEELEY 1981) and the garrigues in France (TRABAUD 1980, TRABAUD & LEPART 1980), in Israel (NAVEH 1974) and in Greece (PAPANASTASIS 1977, 1978), are some of the examples. In Spain, heath and Cistus form degraded communities with a good response to fire, either due to sprouts as in the case of the heath (Erica) or to seeds as in the rockroses (Cistus).

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Table I.- Average and total cover values of the shrub found before burning.

San Isidro woodland

Date of sampling JUN 1985

Date of burning MAY 1986

	n	$\bar{x}$	$\nabla$	$\bar{X}$
Genista scorpius	60	23.3	19.1	13.9
Rosa sp.	13	8.8	5.1	1.1
Halimium umbellatum	7	2.7	1.5	0.1
Crataegus monogyna	6	18.3	11.0	1.0
Quercus rotundifolia	2	10.5	9.5	0.2
Dorycnium pentaphyllum	1	15.0	-	0.1

Cota Isestil scrub

Date of sampling JUL 1985

Date of burning JUL 1985

	n	$\bar{x}$	$\nabla$	$\bar{X}$
Erica australis	100	78.6	25.5	78.6
Calluna vulgaris	2	10.0	0.0	0.2
Halimium alyssoides	1	10.0	-	0.1

Majada of Setibar scrub

Date of sampling JUL 1985

Date of burning JUL 1985

	n	$\bar{x}$	$\nabla$	$\bar{X}$
Erica australis	89	35.2	23.2	31.4
Calluna vulgaris	85	25.2	17.7	21.4
Erica umbellata	70	25.1	13.7	17.6
Arctostaphylos uva-ursi	67	65.0	30.5	43.5
Halimium alyssoides	53	6.8	5.9	3.6
Quercus pyrenaica	34	11.5	8.2	3.9
Halimium umbellatum	7	2.8	1.0	0.2

San Isidro sky station

Date of sampling JUL 1985

Date of burning JUL 1986

	n	$\bar{x}$	$\nabla$	$\bar{X}$
Calluna vulgaris	100	86.6	10.5	86.7
Vaccinium myrtillus	98	2.5	1.4	2.4
Daboecia cantabrica	8	10.0	5.0	0.8
Erica australis	7	29.2	22.9	2.0

