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SILVICULTURE: FOREST FIRES, GRAZING

The authors of the present article outline the main features of the contributions presented during the Third National Congress of Silviculture – session two "Silviculture, Fire and Grazing". Most of the works referred to fire, with particular attention to previsions, prevention and restoration activities in relation to changes taking place in the Italian forest scenarios.

Many authors highlighted the necessity of modifying the approach towards fires and of widening the application of new prevention methods, such as prescribed burns.

As concerns grazing, the wish of the application of sustainable managing models, as well as of those respectful of the environment and of the productive functions of grazing, has been expressed.

Key words: forest fires; grazing, silviculture; Italy.

We summarize the main issues about forestry and fire, and forestry and grazing in Italy as discussed at the Terzo Congresso Nazionale di Selvicoltura (3rd National Congress of Silviculture).

The two subjects will be separately dealt with, and similarities will be stressed.

1. Forest fire

Many presentations focused on forest fire and proposed possible solutions. The summary is here divided into: present status; prediction and prevention; extinction; recovery; planning; and prospects.

1.1. Present status

Presentations updating the fire-caused problems are here summarised.

As first, trends are analysed. In the period 1978-2007, number of fires and burned area tended to decrease in Italy. This tendency was interpreted

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as a result of improved prevention actions. A change in social, economic and environmental conditions may have contributed. As an example, fire spread has changed because fires are faster in new spontaneous forests. that has considerably increased in recent times. Therefore, fires are lower in number but faster in spreading. The transition from agricultural land to bushland, with consequent increase in biomass, thus causes a new fire behaviour.

Urban-forest interface is increasing in Italy. This factor contributes to change the spatial distribution of fires. Anthropic areas are subjected to more frequent fires, while remote forest areas benefit from lower opportunities of human-caused ignition. Forest cultivation, however, is decreasing and fuel load is increasing. Urban boundaries are closer and closer to forests. There are more opportunities for ignition and fire spread to the forest. Forest fires are more and more a potential hazard for the cities so that forest firefighting and civil protection have to cooperate. Such high fire hazard may be reduced by an integrated forest management.

Because of the changed spread scenarios, more attention to the causes of fire and more research on the investigation of causes are recommended. An objective description is needed, without emotional and misleading approach. Voluntary causes are very often cited as dominant, but those citations are just hypotheses, not the result of investigation. On average, the cause of 93% of fires is unknown. Only 7% is up to specific people. A proper knowledge reduces the misinterpretation of the causes. Misinterpretation may negatively affect the actions for fire containment. For example, the erroneous opinion that fires are ignited with the aim to get a job in post-fire recovery actions is the basis of the law 353/2000, that prohibits post-fire afforestation and any action of public-funded environmental engineering. In contrast, this type of voluntary causes is not widespread throughout Italy, while recovery would considerably benefit from proper post-fire actions. Misleading laws must be amended.

The analysis of fire causes must distinguish the forest types. Methodologies for mapping burned areas and analysing fire distribution were discussed. Emphasis was also on the importance of studying fire effects on forests, and in particular on seed and seed germination of the forest species at higher diffusion in the areas at higher fire risk.

As a main conclusion about the present status of wildfire in Italy, spread scenarios were suggested as a main issue.

1.2. Prediction and prevention

Several presentations highlighted that to improve the analysis of the relationship between risk and prevention is more significant than to develop the knowledge about these two aspects separately. These aspects are strictly related, i.e. risk analysis has to be used in infrastructural and

silvicultural prevention planning. Concerning fire risk indices, the history of their application in the last 30 years in Italy was described, starting from the first systematic applications, such as the IREPI index proposed for winter conditions of the Alps in the '80s, up to the Canadian method. The present application of risk analysis at European level within the EFFIS system was also treated. All this tools give information and data that are very useful in both fire extinction and prevention, such as prescribed burns. Prescribed burn is a long tradition in many foreign countries but at present it is applied in Italy only for research purpose. Several presentations underlined the usefulness of prescribed burns and suggested this prevention technique as a key factor of future fire management in Italy. It is ecologically healthy, cheap and absolutely adaptable to the actual Italian scenarios. However, there is a need of overcoming prejudice of many forest managers and citizens, improving fire danger analysis, developing specific firefighter training, and defining prescription parameters for Italy. Prescribed burn in Italy may be a "new" technique for new fire spread scenarios.

1.3. Extinction

Some presentations focused on the importance of fire boss (incident commander) training, in particular about fire behaviour. A need to link all training activities to the forest fire plan was also underlined. This is important in order to address and manage suppression operation taking into account the forest area characteristics, type of vegetation, fire danger, and applied and planned silvicultural treatments (including prescribed burn). Forest knowledge is considered as a priority for innovative training activities, and has to be the basic of a new professional, i.e. a wildfire analyst, who may assess all firefighting methods and activities. At present, just technicians of extinction are available.

1.4. Post-fire recovery

Discussion whether carrying out specific activities or awaiting for natural recovery was carried out. Need and method of recovery activities must be carefully assessed depending on the Italian forest conditions and fire severity. The success of recovery is based on a deep knowledge of fire effects, natural feedbacks and response of treatments and methods applied.

1.5. Planning

Planning of fire prevention and suppression is an essential tool for getting effective results in fire management. Nevertheless, only an integrated approach allows to develop coordinated actions. All the aspects

must be examined in order to avoid that some of them become limiting factors.

The global approach of planning needs new methods. We must move from the statistic methodology to a detailed territorial analysis of fire risk. The relationships between forest fire and grazing have to be included. Fire prevention and suppression plans must integrate all the aspects and provide a global proposal. Particularly they must assess some aspects neglected today, such as atmospheric pollution caused by fires, and offer "new" prevention practices. For example, many Authors suggest that prescribed burn may reduce the pollution emitted by forest fire.

2. Pasture

The importance of a rational grazing on pastoral resources was stressed, with focus on both productive and environmental aspects. Planning of both pasture and forest resources was emphasized to aim at environmental management.

Present management of pasture is mainly affected by undergrazing conditions, although few situations of overgrazing still occur. Undergrazing causes a decline in quality, with higher frequency of plant species with low forage value. Encroaching shrubs modify the range structure, and eventually destroy the entire pasture in the long term. Overgrazing implies other negative consequences (disappearance of the species less suitable to intensive animal intake, deep modifications in the habit of herbaceous species, erosion risks) but at the same time it can decrease the biomass occurring on the pasture and this can lead to a positive reduction of fire hazards, which is important especially in the forest lands or in the areas nearby woods.

To reduce the negative effects briefly mentioned, it is important the application of management models which are sustainable and that can respect the environment and the productive functions of pastures.

3. Prospects and conclusions

Italian forestry has changed and further fast changes are expected. In the last decade, forest, woodland, and urban forest interface increased. In the same period, the number of fire decreased but fire risk increased.

Voluntary fire is overestimated. The regulation that does not allow post-fire recovery activities must be changed.

An improvement of fire prediction methods is needed. This is important also for the application of prescribed burn. This prevention technique is receiving great attention from Italian forest scientists and managers (FORUMFORESTE, 2009). The use of prescribed burn is warranted by the change of forest susceptibility to wildfire, e.g. the variation of fuel characteristics because of global change. A simple suppression policy implies higher costs and is often inadequate, especially in the most difficult situations. Forest fire reduction is strongly related to prevention. This may change forest landscape, and create different fire spreading conditions. Many Italian Regions allow prescribed burn. Nevertheless its diffusion still needs knowledge improvement, firefighter training and awareness of fuel prevention importance for the new forest scenarios.

A fire planning able to face these problems is suggested. It should be based on politic decisions that do not take into consideration only extinction action.

In the formulation of fire plans, a fire management instead of a fire control approach must be applied (BOVIO, 1989). Moreover, fire planning has to join the consolidate methods for target definition, such as the RASMAP concept (BOVIO and CAMIA. 2001), with a detailed analysis of territorial data as allowed by actual tools applied in the most recent Regional plans (REGIONE MOLISE, 2009).

Pasture and forest resources have strong management interactions. An integrated management of these resources may allow grazing to be back to Italian mountain areas.

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