



One Year Weeding-Seven Years Seeding with *Celosia Argentina*- Farmer's Experience at Ananthapuramu District

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Abstract

Moisture is the most limiting factor in the rainfed province like the Ananthapuramu district during the crop critical periods. Weeds are the most phenomenal things that compete with the crops for moisture and worsen the situation. *Celosia* is one of the major weeds colonized across the district due to continuous rains during the last quarter of the year which is favorable for seed multiplication and became a panic weed causing huge damage. Most of the farmers in the Ananthapuramu district adopted the **one-year weeding-Seven Years Seeding concept** in an integrated manner and were able to remove the weed seed bank from their farms successfully.

Keywords: Weed seeds, crop weed competition, *celosia*

Introduction

Rainfed areas are dwindled with low productivity due to biotic and abiotic stresses. Weeds are considered an important biotic constraint to food production. Their competition with crops reduces agricultural output in terms of quantity as well as quality and increases the cost of cultivation involved in the control of weeds. Weeds survive in the fields as seeds, tubers, bulbs, rhizomes, and other vegetative structures in the offseason causing huge losses.

The weed seed bank is the reserve of viable weed seeds present on the soil surface and scattered throughout the soil profile. It consists of both new weed seeds recently shed, and older seeds that have persisted in the soil from previous years. It consists of both new weed seeds recently shed, and older seeds that have persisted in the soil from previous years. In practice, the soil's weed seed bank also includes the tubers, bulbs, rhizomes, and other vegetative structures through which some of our most serious perennial weeds propagate themselves. The weed seed bank serves as a physical history of the



Fig: 01. Celosia weed Infected fields in Ananthapuramu district



Fig: 02. Rapid fire stage of Celosia weed Infected fields at Ananthapuramu district



Fig: 03. Reaper to cut the celosia to prevent further spread



Fig: 04. Harvested seed along with Foxtail millet through a combiner



Fig: 05. Removal of celosia through brush cutters

past successes and failures of cropping systems, and knowledge of its content (size and species composition) can help producers both anticipate and ameliorate potential impacts of the crop weed competition on crop yield and quality. Eliminating “deposits” to the weed seed bank also called seed rain is the best approach to ease future weed management.

Context Of One Year Weeding Seven Years Seeding- Vice Versa

One year's seeding makes seven years' weeding!" Harvest weed seed control is an excellent approach that targets weed seed removal and/or destruction during the crop harvest operation. It



significantly reduces the soil weed seed bank. Over five years in Nebraska, broadleaf and grass weed seed banks were reduced to 5 percent of their original density when weeds were not allowed to produce seeds. However, in the sixth year, weeds were not controlled and the seed bank density increased to 90 percent of the original level (Burnside *et al.*, 1986).

Based on the above concept an attempt was made in the Ananthapuramu district farmers adopted various integrated methods to reduce the weed populations of *Celosia Argentia* by using harvest weed seed control which is popular in western countries and others too.

Harvest Weed Seed Control

With diminishing herbicide resources and the need to maintain highly productive reduced tillage and stubble retention practices, growers began to develop systems that targeted weed seeds during crop harvest. Research and development efforts over the last two decades have established the efficacy of HWSC systems. The biological attribute of seed retention at maturity in some annual weed species enables high proportions of total weed seed production to be collected (harvested) when these species are present at grain crop harvest.

The opportunity to target weeds during harvest by preventing seed bank inputs has been well recognized for several decades in many cropping systems, globally. The realization of this opportunity has not, however, resulted in the widespread introduction of systems that target weed seeds during harvest. The focus of this review then is to describe where and how the development of HWSC has occurred. Then to highlight opportunities and approaches for the introduction of HWSC in global cropping systems.

Harvest weed seed control (HWSC) is a key component of the. It is our final chance to non-chemically reduce the number of problematic weed seeds that are returned to our weed seed bank. HWSC options include chaff carts, narrow windrow burning, direct baling, and the more recent options of chaff lining, chaff decking, and the use of a seed impact mill. The decision of which HWSC tool to implement on your farm is a difficult one, as no one tool suits all farms. Weed-type crops grown, rainfall, yield potential, local machinery dealers – all of these things and more, influence the decision of what HWSC tool to utilize.

Seed Biology of *Celosia Argentia*

Celosia argentea L. is an herbaceous annual weed found in many crops such as Groundnut (*Arachis hypogaea* L., Finger Millet (*Eleusine coracana* L. Gaertn), and Maize (*Zea mays* L.). It is an erect plant and grows to a height of 1.0 to 1.6 m under favorable conditions. It has numerous lateral



roots below the soil surface. These enable it to efficiently absorb nutrients from the soil. Lately, it has become a troublesome weed to control in field crops as it emerges several times during a cropping cycle and escapes weed control measures. It produces 2,000 to 3,000 seed plant⁻¹ which adds to the soil seed bank. It's the worst weed that affects almost all crops.

Experience at Ananthapuramu District Farmers' Fields

During the years 2018 and 2019 due to continuous rains and weed seeds of *celosia argentea* entered a few parts of the district and rapidly spread like a wildfire in many farmers' fields too and unable to control the weed population and not feasible for the mechanical methods of continuous rains. Farmers of Ananthapuramu chose different methods to remove the celosia based on their land holdings and severity of incidence. Most of the farmers used hand weeding, inter-cultivation, use of reapers to cut the celosia before flowering, brush cutters, and combiners/ harvesters and separated the celosia seed through sieves and disposed safely to avoid further multiplication.

While harvesting the pigeonpea in most of the farmer's fields the celosia was harvested and the seed was collected from the interrow spacings at physiological maturity to avoid the seed bank that one-year seeding causes seven-year seeding to be adopted. The seed was collected from the harvester cautiously and destructed to avoid further germination. Further, the reaper was used to cut the remaining celosia for further spread and seed multiplication of the celosia in most of the farmer's fields and cleared remaining celosia weed seed bank that existed in the soils.

By adopting the integrated methods most of the farmers can able to remove the most severe and worst celosia weeds from their farms for further spread in the district which is a major weed acted as a limiting factor to drawing excess moisture from the soil causes the competition for the moisture to crops of Ananthapuramu district viz., peanut, pigeonpea, castor, etc.

Conclusion

Most of the farmers in Ananthapuramu district adopted the base tag line as a theme one-year weeding-Seven Years Seeding concept and imparted the various methods viz., hand weeding, inter cultivation, removal of weed seed bank by various methods of seed separation, prevention of flowering of Celosia continuously and can ably remove the worst weed that impacting yields of rainfed crops viz., peanut, pigeonpea, and castor successfully.

References

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