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Nutritious horticulture crops for malnutrition alleviation

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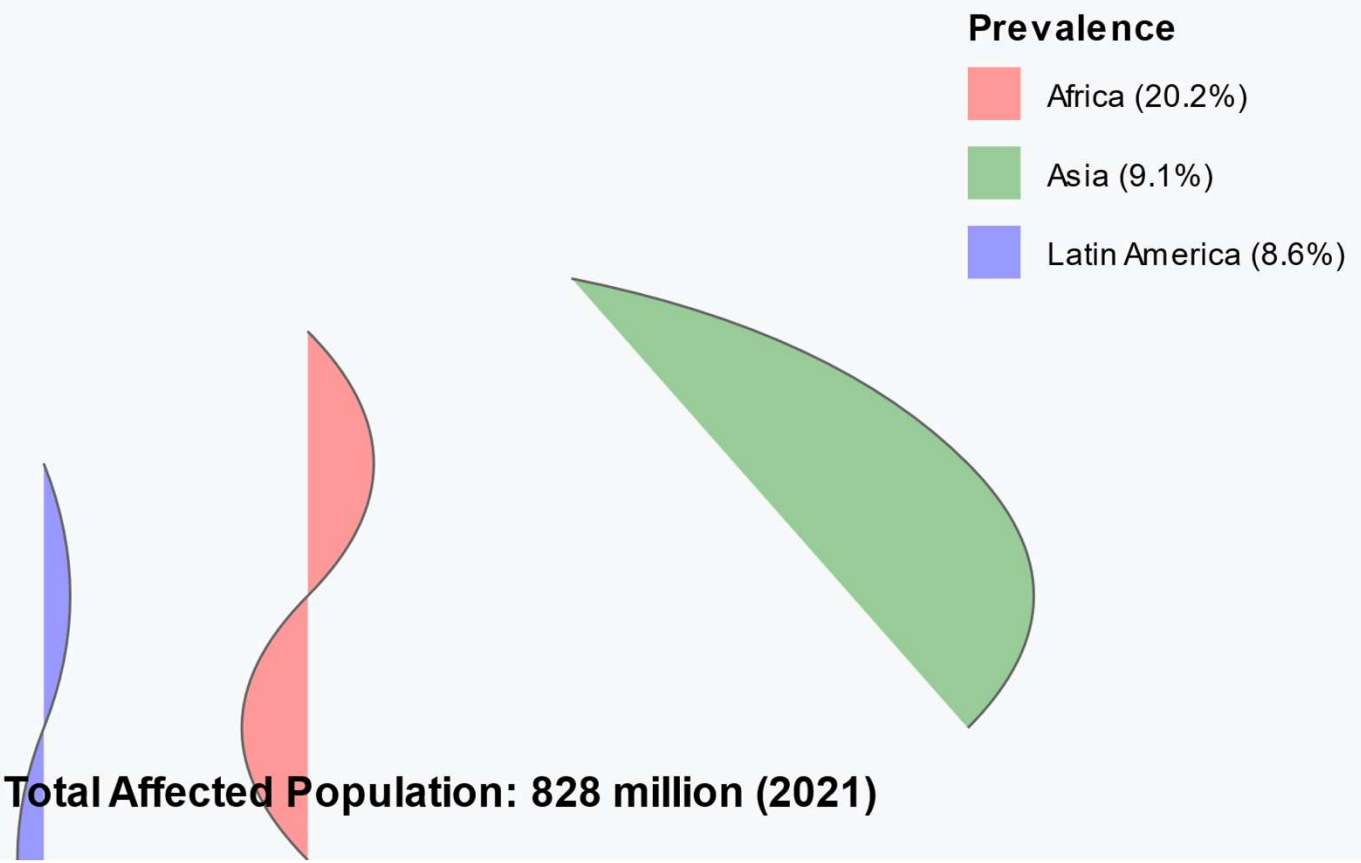
Abstract: Malnutrition, including undernutrition, micronutrient deficiencies, and the rising burden of overweight and obesity, remains a significant global health challenge. Horticulture crops, such as fruits, vegetables, roots, tubers, and legumes, have the potential to alleviate various forms of malnutrition through their nutrient-dense profiles. This assessment studies the nutritional compositions and health benefits of selected horticulture crops and their role in combating malnutrition. The data shows that horticulture crops are rich sources of essential vitamins, minerals, dietary fiber, and phytochemicals. For example, spinach and kale are excellent sources of vitamins A (472 µg RAE and 565 µg RAE, respectively), C (28.1 mg and 93.4 mg), and K, as well as folate (179 µg) and iron (2.7 mg and 1.1 mg). Sweet potatoes are particularly high in vitamin A (835 µg RAE), while legumes like lentils provide substantial amounts of protein (9.0 g), fiber (7.9 g), folate (179 µg), iron (3.3 mg), and zinc (1.1 mg). Horticulture crops have demonstrated their ability to alleviate micronutrient deficiencies, reduce the risk of chronic diseases, and improve maternal and child health. However, challenges such as access, affordability, seasonality, and knowledge gaps must be addressed. Leveraging opportunities like biofortification, home/community gardening, value chain development, and nutrition education can transform the nutritious bounty of horticulture crops into sustainable solutions for combating malnutrition globally.

Keywords: Malnutrition; undernutrition; micronutrient; deficiencies; overweight; obesity; nutrition; food security.

Global Malnutrition Prevalence



Triple Burden of Malnutrition

Acute Undernutrition

(Wasting)

45.4M

Children Under 5

Chronic Undernutrition

(Stunting)

149M

Children Affected

Childhood

Obesity

39M

Children Affected

Total Global Impact: 828 million people affected (2021)

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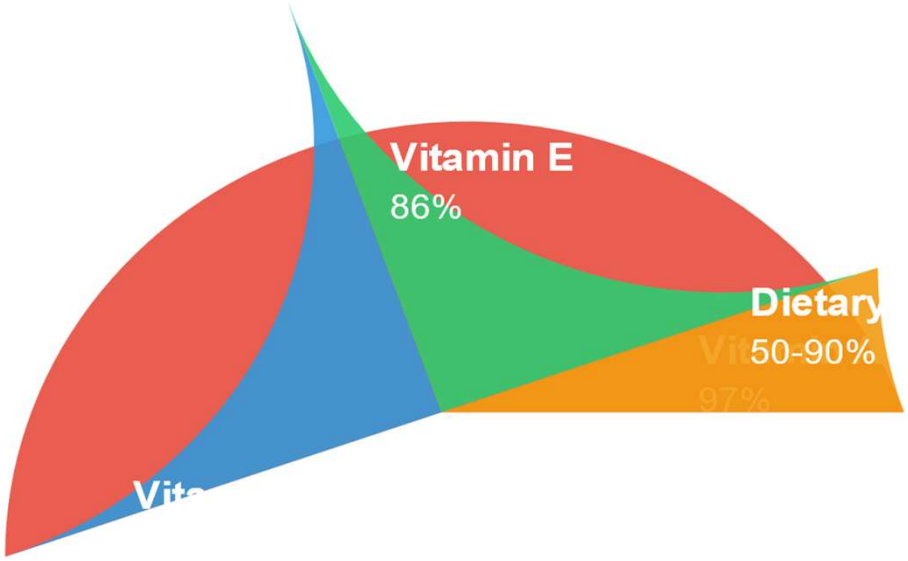
Nutrient Contribution from Horticulture Crops



Vitamin A (97%) Vitamin C (91%) Vitamin E (86%) Dietary Folate (50-90%)

Legumes contribute 40% of iron and zinc in plant-based diets

Leafy Greens

Spinach (per 100g):

- Vitamin A: 472 µg RAE
- Vitamin C: 28.1 mg
- Folate: 194 µg
- Iron: 2.7 mg

Root Crops

Sweet Potato (per 100g):

- Vitamin A: 835 µg RAE
- Vitamin C: 19.6 mg
- Fiber: 3.3 g
- Potassium: 475 mg

Legumes

Lentils (per 100g):

- Protein: 9.0 g
- Fiber: 7.9 g
- Iron: 3.3 mg
- Folate: 179 µg

Implementation Strategies

Home and Community Gardens

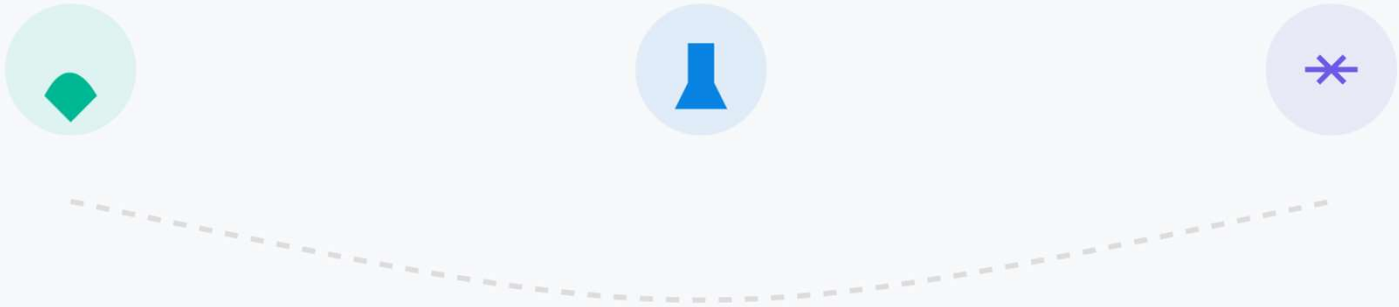
- Dietary Diversity 68%
- Women's Groups 47%
- Nutrition Education 35%

Biofortification Programs

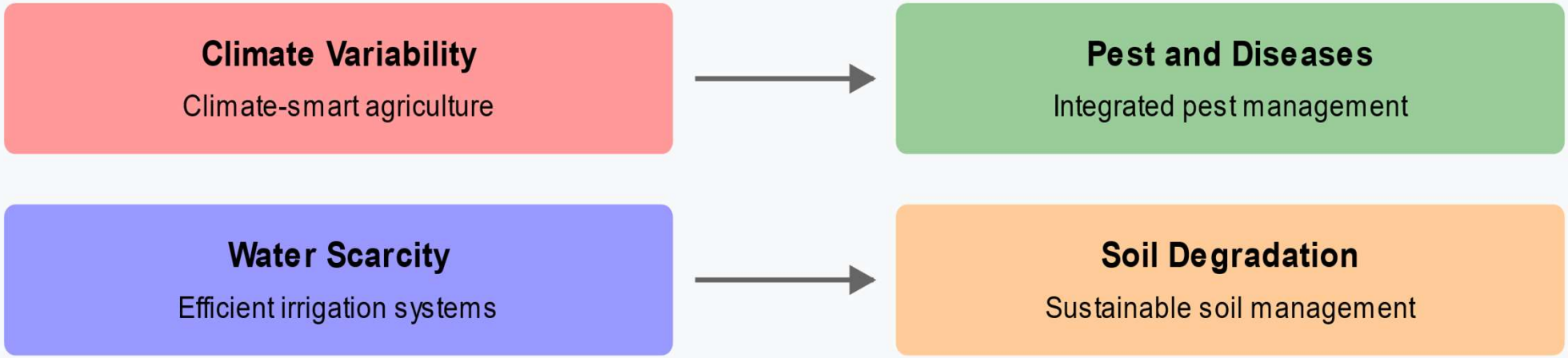
- Vitamin A Deficiency 42%
- Farmer Adoption 76%
- Consumer Preference 89%

Value Chain Development

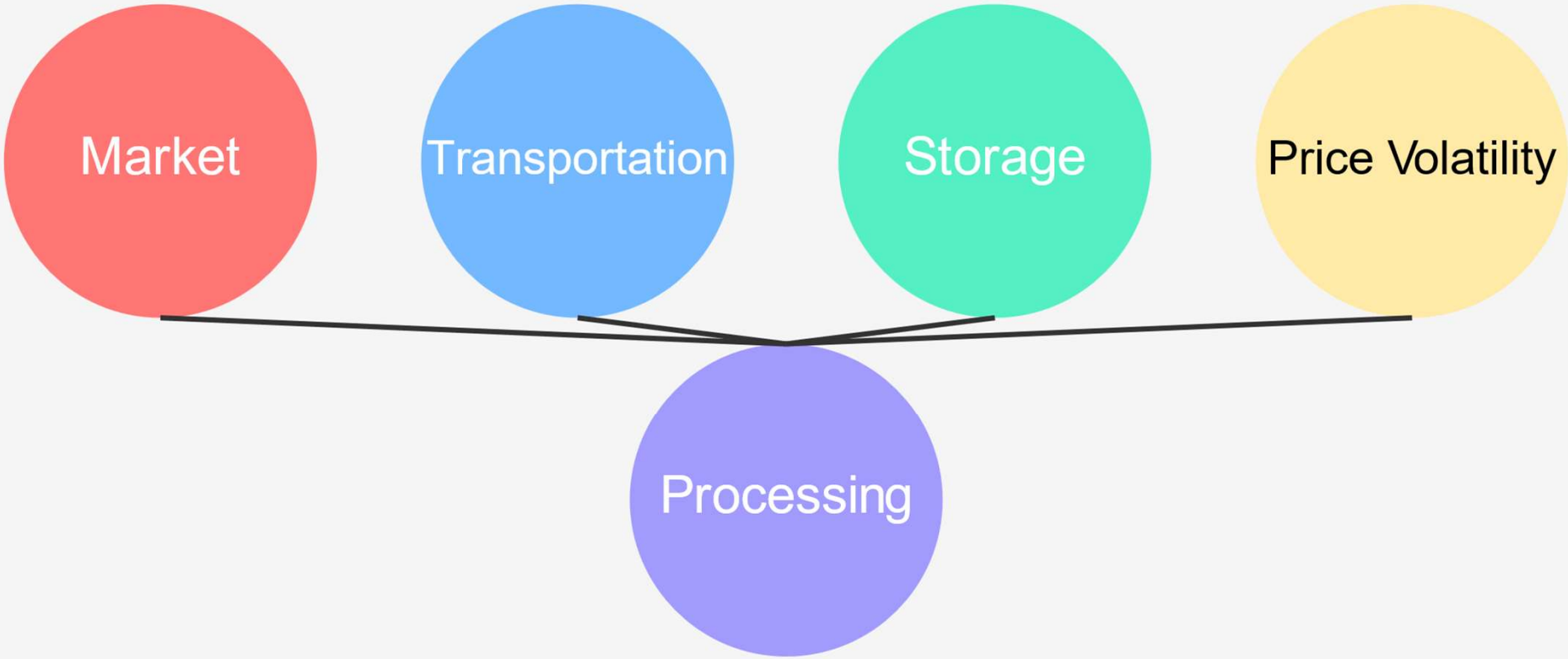
- Nutrient Loss 34%
- Vitamin A Preservation 78%
- Farmer Income 23%



Challenges and Solutions

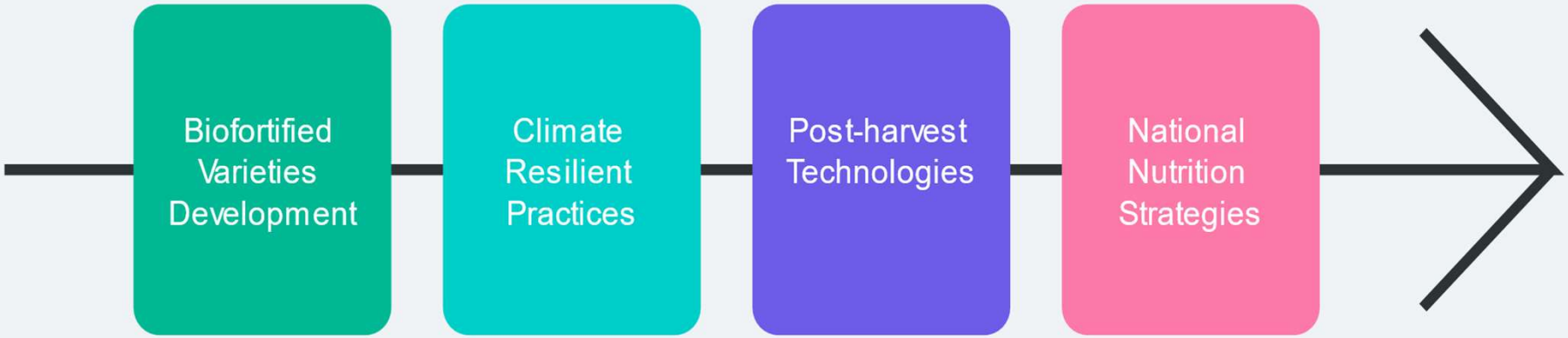


Access and Distribution Barriers

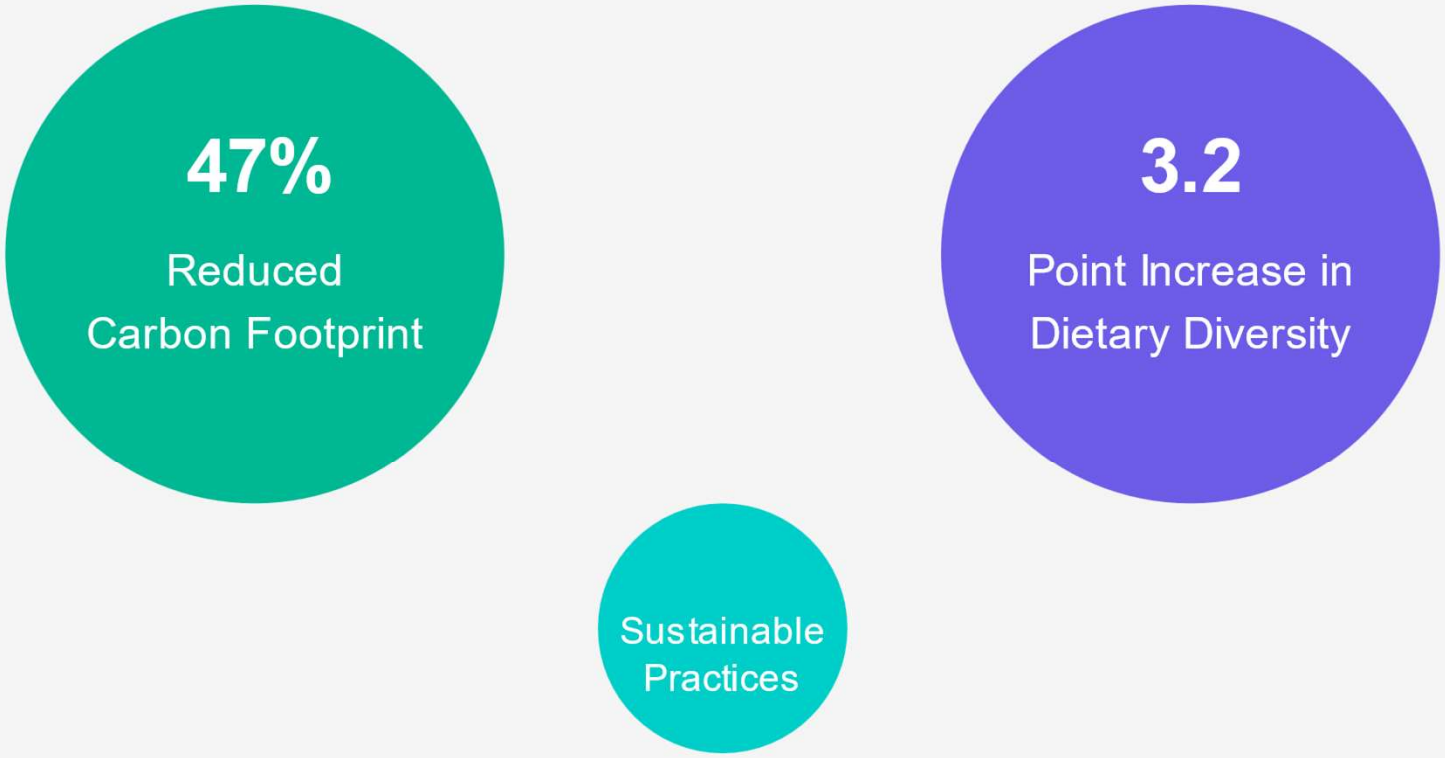


Knowledge and Behavior Change Approaches

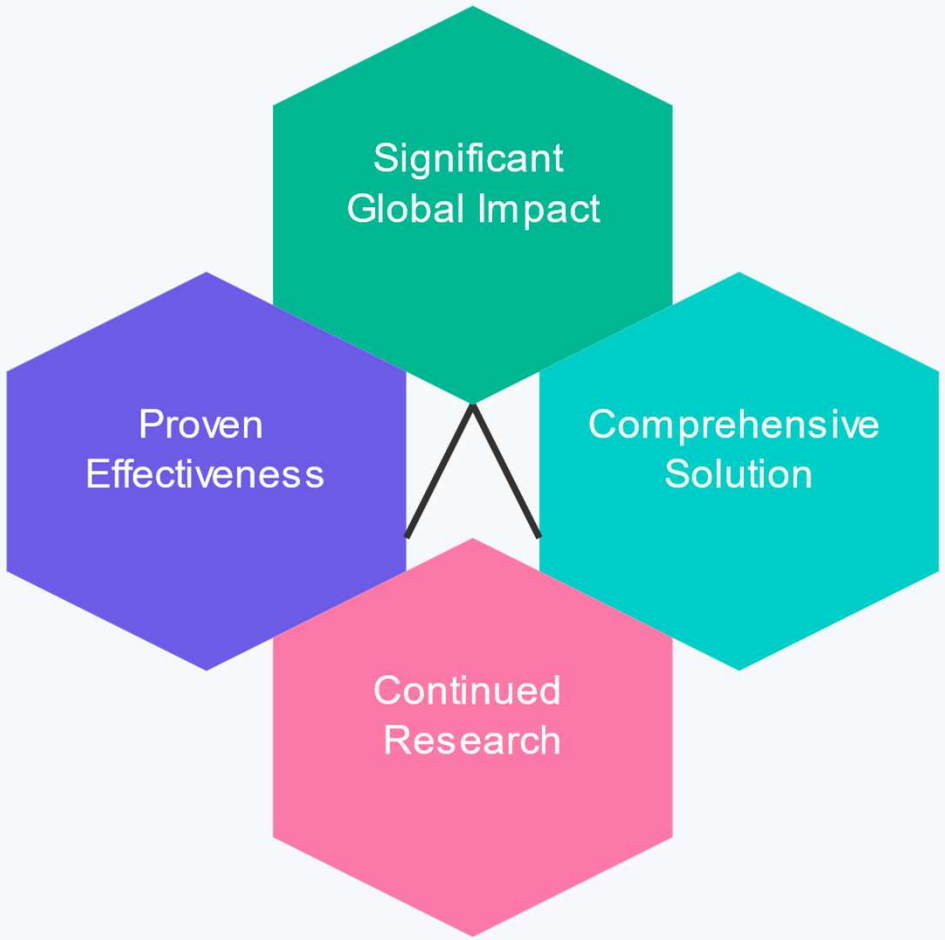
Future Perspectives: Key Focus Areas



Environmental Impact



Conclusion



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